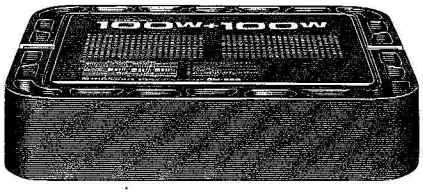
Service Manual

PIONEER



The photo shows the model GM-201.

ORDER NO.
CRT1061

POWER AMPLIFIER FOR CAR STEREO

GM-203 US

COMPONENT CAR STEREO STEREO MAIN AMPLIFIER

GM-201 EW

POWER AMPLIFIER FOR CAR STEREO

GM-123 US, CA, ES

COMPONENT CAR STEREO STEREO MAIN AMPLIFIER

GM-121 EW

SPECIFICATIONS

Power source .....DC14.4 V (10.8~15.6 V allowable)
Grounding system .....Negative type
Max. current consumption (GM-203, GM-201) .....20 A
Max. current consumption (GM-123, GM-121) .....15 A
Dimensions (GM-203, GM-201) 230(W) × 60(H) × 270(D) mm [9(W) × 2-3/8(H) × 10-5/8(D) in.]
Dimensions (GM-123, GM-121) 230(W) × 40(H) × 270(D) mm [9(W) × 1-5/8(H) × 10-5/8(D) in.]
Weight (GM-203, GM201) 3.9 kg (8.6 lbs.) (Cords for wiring not included)
Weight (GM-123, GM121) 2.7 kg (5.9 lbs.) (Cords for wiring not included)
Continuous power output is 45 W per channel min. into 4 ohms, both channels driven 30 to 20,000 Hz with no more than 0.3% THD. (GM-203, GM-201)
Continuous power output is 28 W per channel min. into 4 ohms, both channels driven 30 to 20,000 Hz with no more than 0.3% THD. (GM-123, 121)

Maximam power output (GM-203, GM-201) .100 W + 100 W (EIAJ)
Maximam power output (GM-123, GM-121) 60 W + 60 W (EIAJ)
Load impedance .....4Ω (4~8Ω allowable)
Frequency response .....10~70,000 Hz ± (±3 dB)
Singnal-to-noise ratio (GM-203, GM-201) 97—107 dB (IHF—A network, at 1 W)
Signal-to-noise ratio (GM-123, GM-121) 95—104 dB (IHF—A network, at 1 W)
Distortion .....0.02% (at 20 W, 1 kHz)
Input level (GM-201, GM-121) ..... 70—250 mV/20 kΩ
Input level (GM-203, GM-123) ..COMPO: 70—250 mV/20 kΩ
LINE IN: 200—700 mV/10 kΩ
BOOSTER: 3—10 V/1 kΩ

These specifications were determined and are presented in accordance with specification standards established by the AD Hoc Committee of Car Stereo Manufacturers.

Note:
Specifications and the design are subject to possible modification without notice due to improvements.

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1. PARTS LOCATION

NOTE:

- *For your Parts Stock Control, the fast moving items are indicated with the marks ★ ★ and ★.*
  ★ ★: GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

The photo shows the model GM-201.

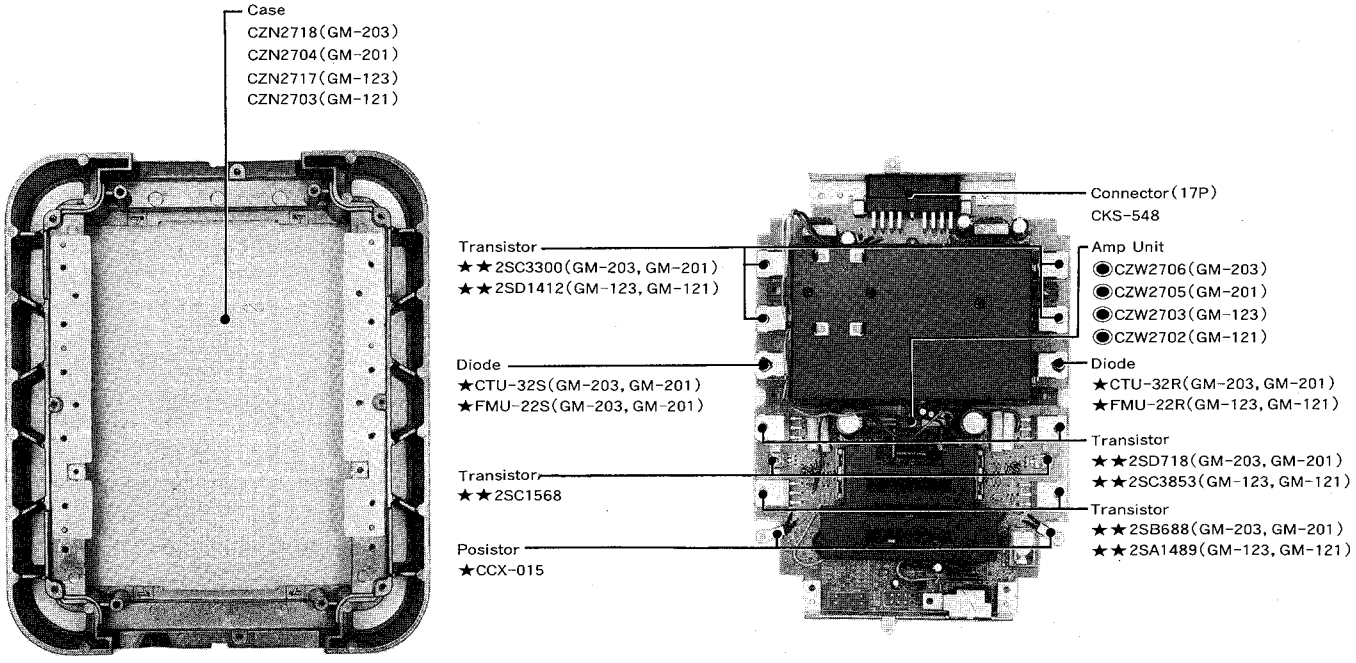


Fig. 1

2. CONNECTION

GM-201, GM121

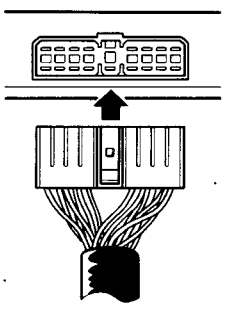
- Test-connect all components before securing them into place. Test-operate your entire car stereo system to ensure that there are no faulty wiring connections between this unit and the rest of your car stereo system.
- The speakers used in conjunction with this unit should be of a high-power capacity type capable of accepting up to a maximum input of*100W.Their impedance should be between 4 ohms and 8 ohms. Using Speakers with different impedance ratings or whose power handling capabilities fall short of the above figure can result in terminal damage to the speakers.
- For detailed information concerning connections between different components and this unit consult their respective instruction manuals and follow those recommendations precisely.
- When wiring connecting cords into place secure them with clampers and adhesive electrician's tape. Additionally, to prevent any damage to the insulative coating of the connecting cords, protect them with adhesive electrician's tape wherever they may come into contact with any sharp edges.
- Wire all connecting cords so that they stay well clear of high-temperature areas such as the heater exhaust port.
- To ensure that all components used in combination with this unit operate properly, be sure to wire the main power supply lead (red) and the memory power supply lead (orange) correctly to the respectively determined points. Failure to do so or errors in this process will result in total inoperation.

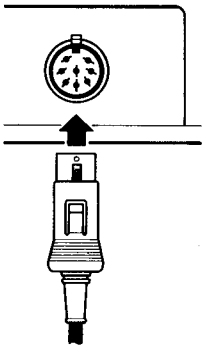
GM-121

- If distance between the deck and this unit is too far to make proper connections, please buy the optional exclusive extension cord for the Component Car Stereo.
- Do not drill a hole into the engine room and connect the memory power supply lead (orange) directly to the battery. Cracks can appear in the insulation of the cable possibly leading to a dangerous short circuit.

*GM-121: 60 W

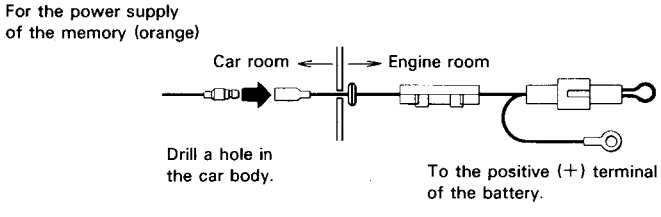
Connections of Cords (Supplied) for Wiring

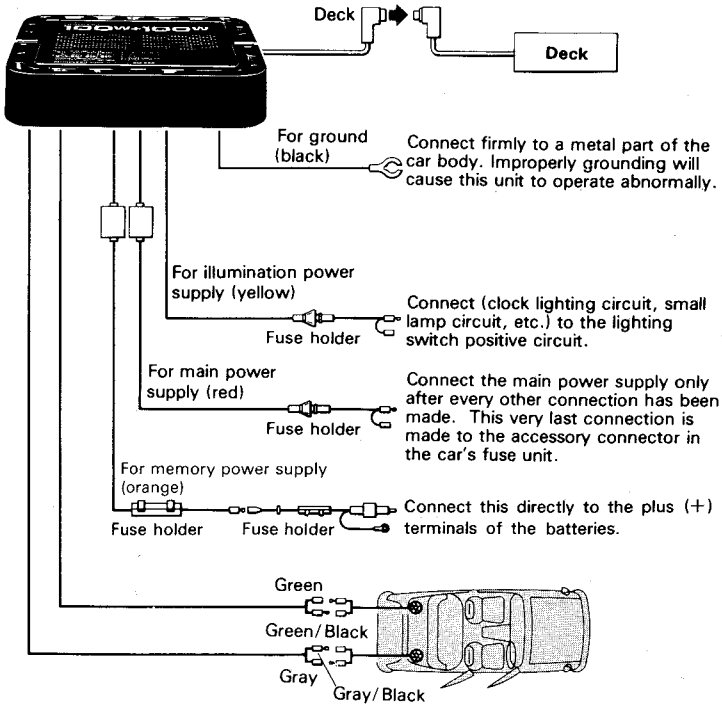




GM-201

- Connect the lead wire (orange) for the power supply of the memory directly to the positive (+) terminal of the battery, making sure to use the supplied power cord (orange).

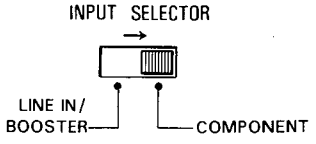

For the power supply of the memory (orange)
Car room
Engine room
Drill a hole in the car body.
To the positive (+) terminal of the battery.


Deck
Deck
For ground (black)
Connect firmly to a metal part of the car body. Improperly grounding will cause this unit to operate abnormally.
For illumination power supply (yellow)
Fuse holder
Connect (clock lighting circuit, small lamp circuit, etc.) to the lighting switch positive circuit.
For main power supply (red)
Fuse holder
Connect the main power supply only after every other connection has been made. This very last connection is made to the accessory connector in the car's fuse unit.
For memory power supply (orange)
Fuse holder
Fuse holder
Connect this directly to the plus (+) terminals of the batteries.
Green
Green/Black
Gray
Gray/Black

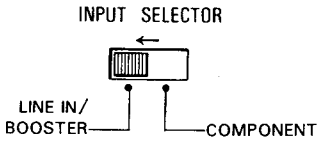
GM-203, GM-121

Input Selector

Be sure to set the input selector before wiring.

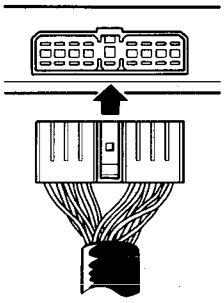


When connecting the unit with a component car stereo.



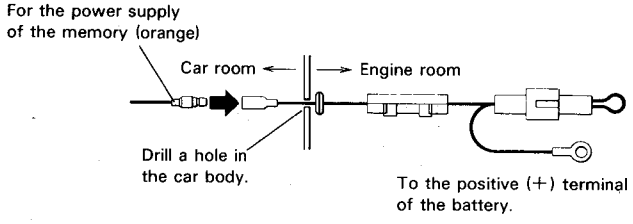
When connecting the unit with a car stereo with pin jacks or with a regular car stereo.

Connections of Cords (Supplied) for Wiring



(GM-203)

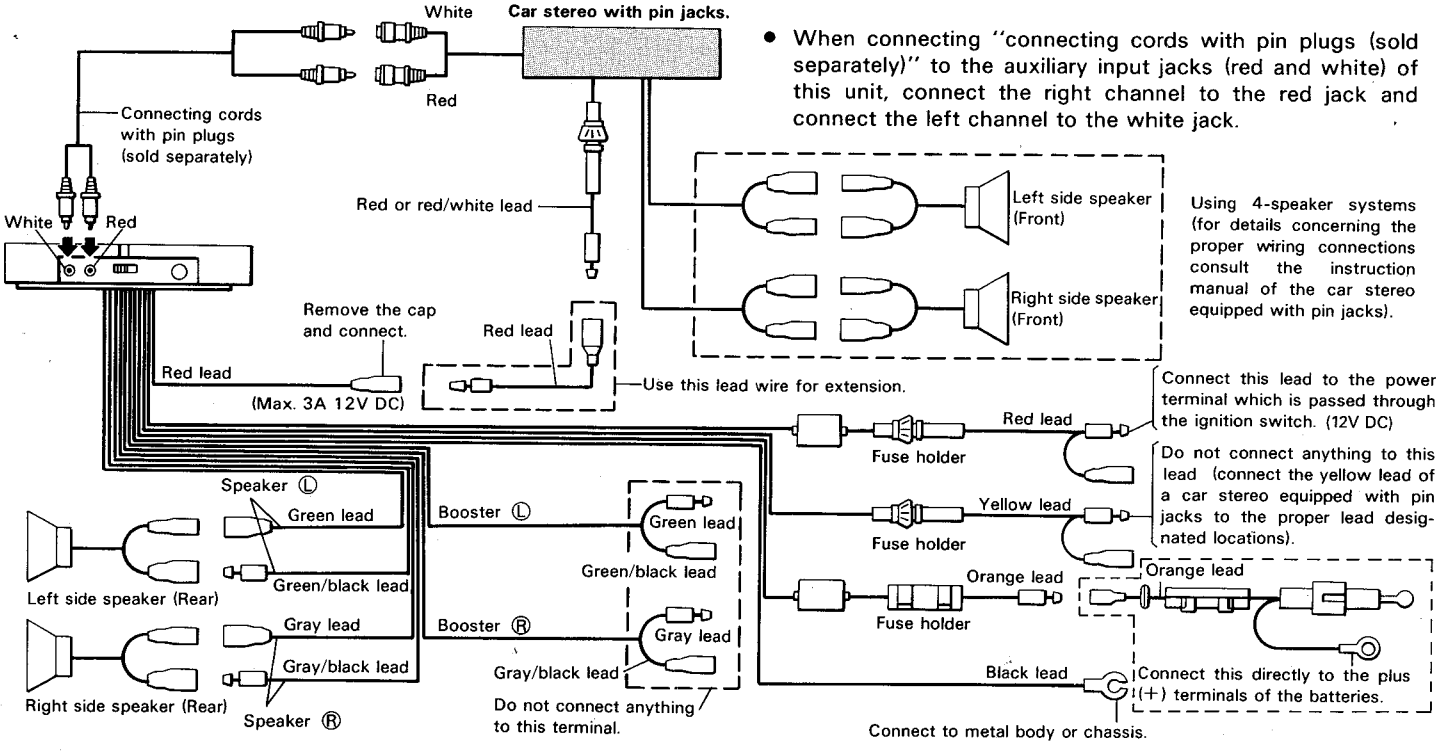
- Connect the lead wire (orange) for the power supply of the memory directly to the positive (+) terminal of the battery, making sure to use the supplied power cord (orange).


For the power supply of the memory (orange)
Car room
Engine room
Drill a hole in the car body.
To the positive (+) terminal of the battery.

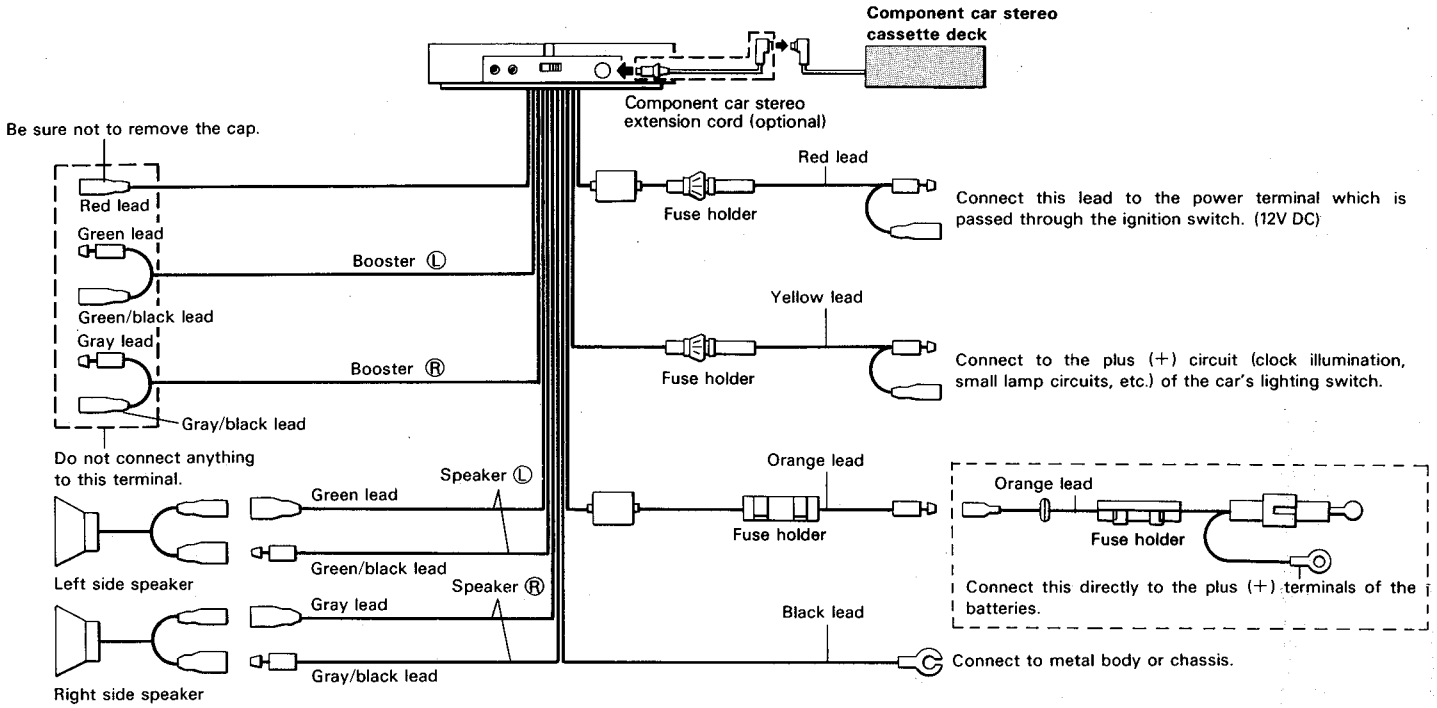
When Combined with a Car Stereo with Pin Jacks

GM-203 only

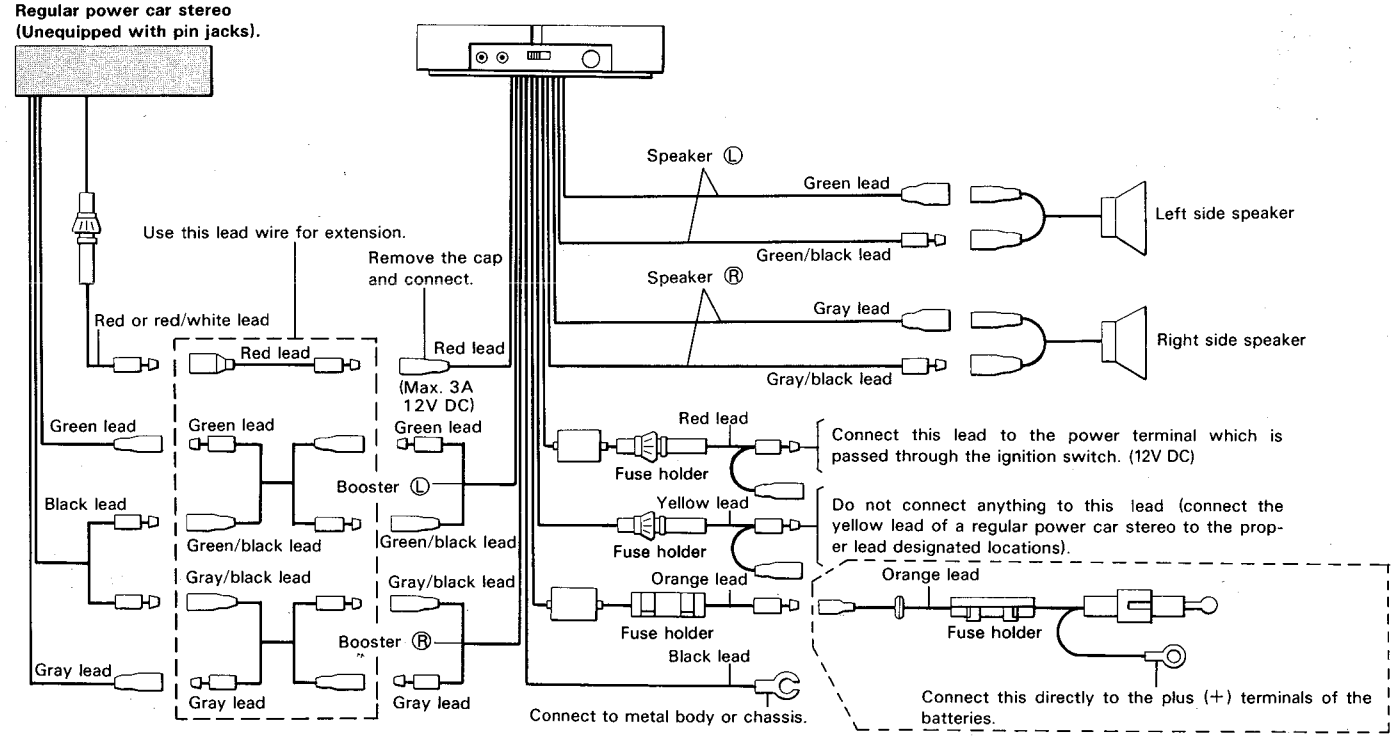
- When connecting "connecting cords with pin plugs (sold separately)" to the auxiliary input jacks (red and white) of this unit, connect the right channel to the red jack and connect the left channel to the white jack.


White
Car stereo with pin jacks.
Red
Connecting cords with pin plugs (sold separately)
White
Red
Red or red/white lead
Left side speaker (Front)
Right side speaker (Front)
Using 4-speaker systems (for details concerning the proper wiring connections consult the instruction manual of the car stereo equipped with pin jacks).
Remove the cap and connect.
Red lead
Red lead
(Max. 3A 12V DC)
Use this lead wire for extension.
Red lead
Fuse holder
Connect this lead to the power terminal which is passed through the ignition switch. (12V DC)
Yellow lead
Fuse holder
Do not connect anything to this lead (connect the yellow lead of a car stereo equipped with pin jacks to the proper lead designated locations).
Orange lead
Fuse holder
Orange lead
Connect this directly to the plus (+) terminals of the batteries.
Black lead
Connect to metal body or chassis.
Speaker Ⓛ
Green lead
Green/black lead
Left side speaker (Rear)
Booster Ⓛ
Green lead
Green/black lead
Gray lead
Gray/black lead
Right side speaker (Rear)
Speaker Ⓡ
Booster Ⓡ
Gray lead
Gray/black lead
Do not connect anything to this terminal.

When Combined with a Component Car Stereo



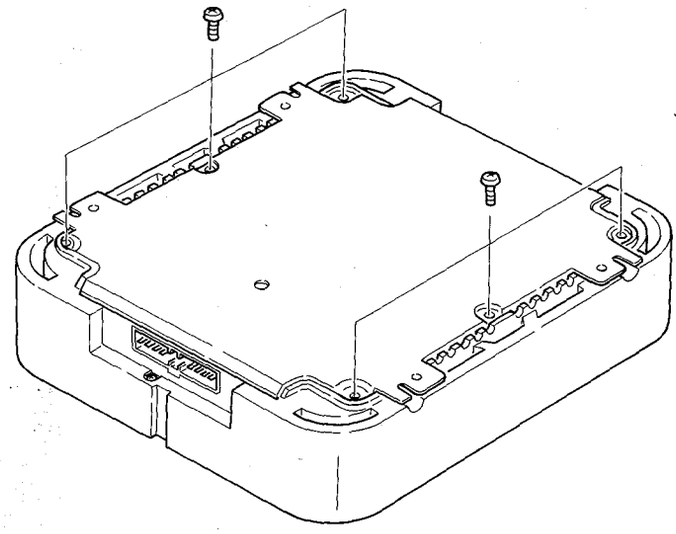
When Combined with a Regular Car Stereo



3. DISASSEMBLY

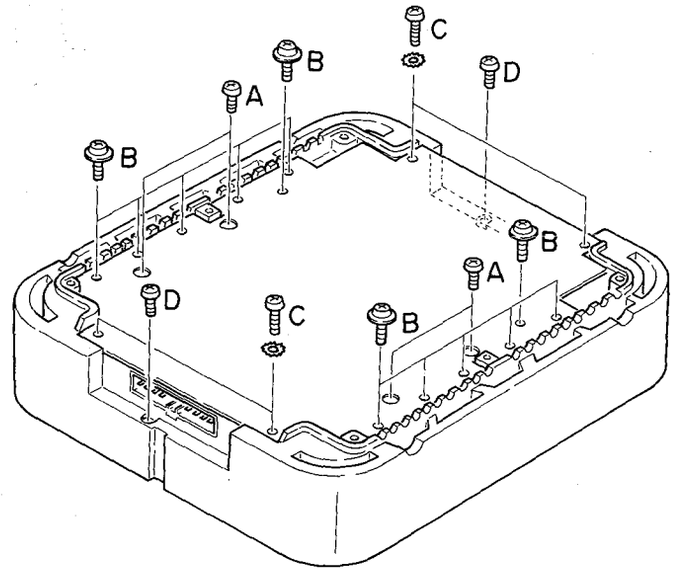
- **Remove the Case**

1. Remove the six screws.



Remove the Amp Unit

1. Remove the six screws labeled "A", twelve screws labeled "B", four screws labeled "C" and two screws labeled "D".



4. CIRCUIT DESCRIPTION

• DC-DC Converter

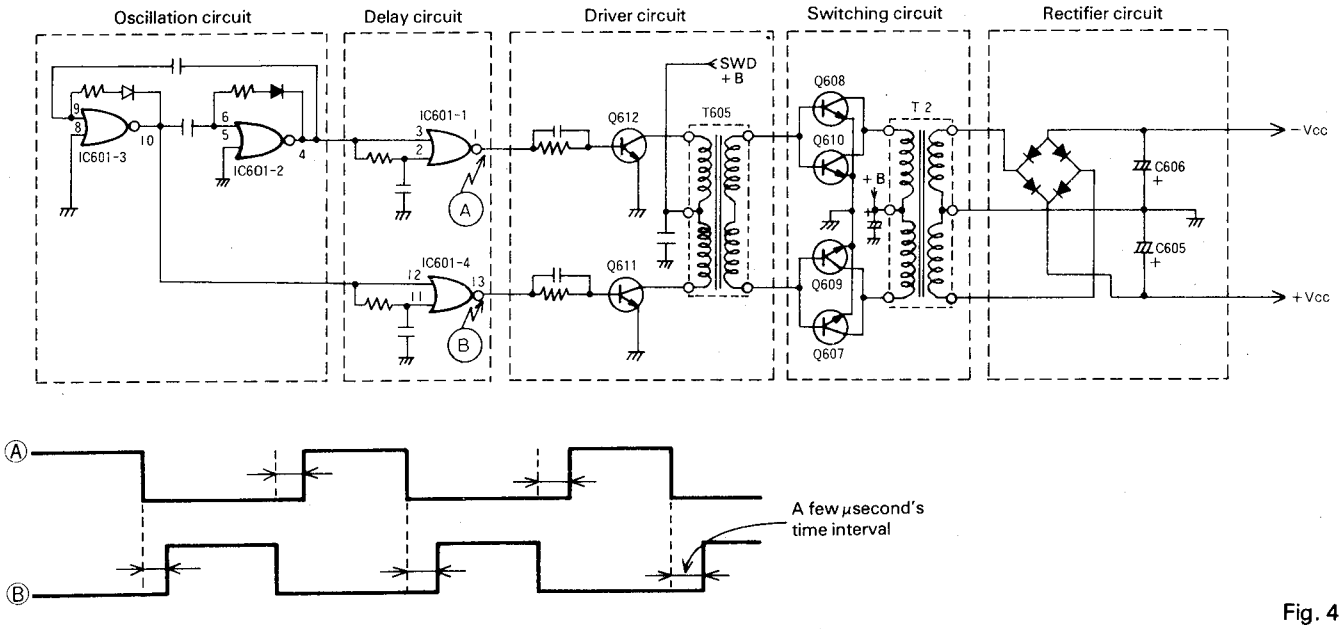


Fig. 4

To achieve its high power capability, this unit employs a high efficiency DC-DC converter to boost DC 14.4V all the way up to ±*Vcc (Non loaded value)

To improve the transient characteristics and the switching waveforms of the power supply, a completly separate excitation configuration was used, with the oscillation frequency set to beyond the audible hearing band (About 29 kHz).

The power supply for the power stage is supplied through the bridge rectifier formed by the high frequency rectification silicon diodes and the large capacity C605 and C606 Capacitors. Additionally, to improve the power supply regulation, our own distinctive DC feedback circuit was incorporated to achieve a constant and stable output voltage.

The DC-DC converter circuit is composed of the oscillation circuit section, the delay circuit section, the driver circuit section, the switching circuit section, and the rectifier cercuit section. The oscillation circuit and the delay circuit use a TTL IC (HD 7402P). In order to insure that the driver transistors and the switching transistors do not turn on simultaneously, the delay circuit placds a time interval of a few useconds between them. (Fig. 4)

*GM-203, GM-201 ..... 26.4 V
GM-123, GM-121 ..... 20.7 V

• Protection Circuit

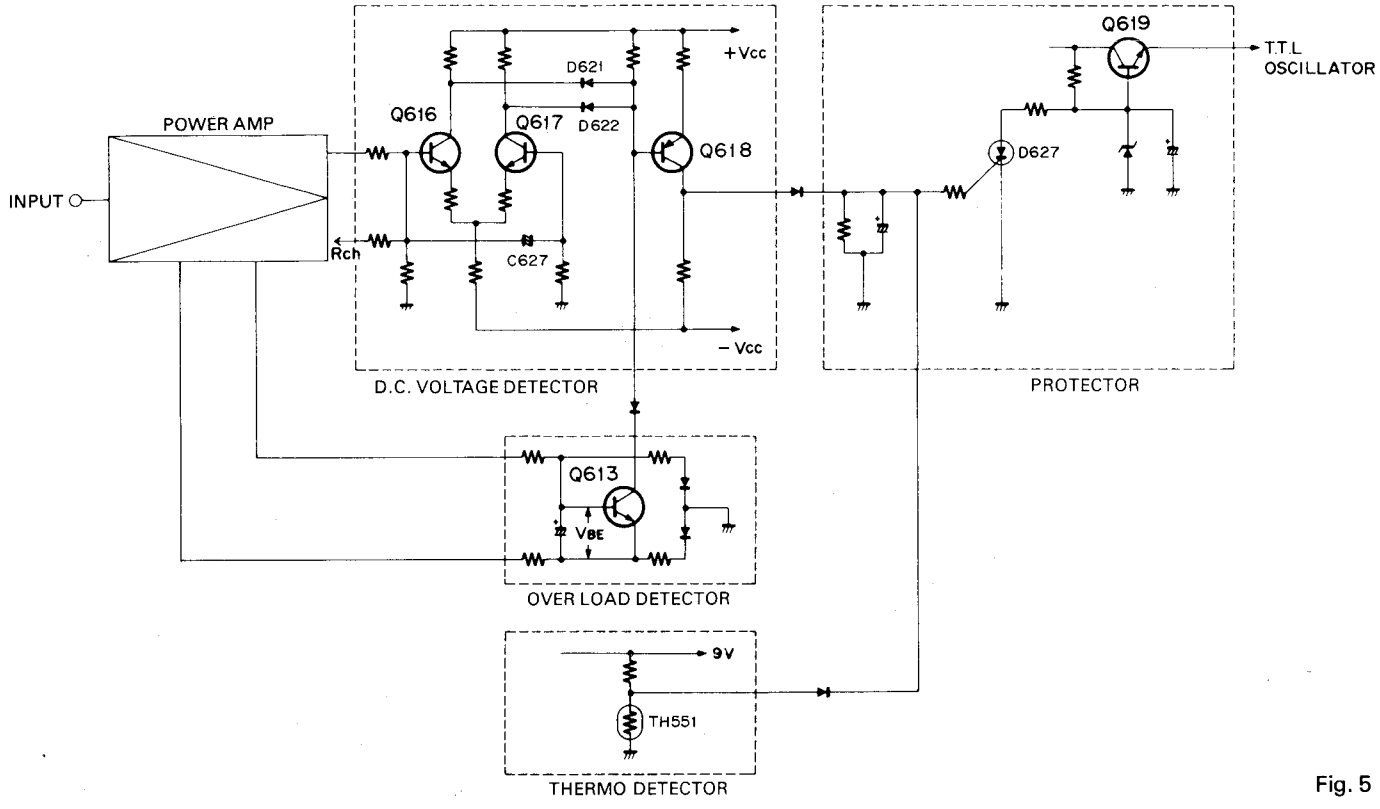


Fig. 5

The protection circuit instantly switches off the high-voltage circuits of the set to protect the final stage amplifier and speaker. The protection circuit consists of the following four parts.

- **Overload Detector Circuit**
  This cercuit detects output terminal shortcircuits, and unduly small load resistance. It forms a bridge circuit with the load serving as one of its sides, and generates a protection signal if the bridge circuit becomes unbalanced, or if VBE of Q613 voltage exceeds 0.6V.
- **DC Voltage Detector Circuit**
  This circuit detects the DC voltage generated at the amplifier output (center) point. The two bases are connected to each other with a capacitor, and one of the terminals is connected to the output center point. AC signals are erased at the same level, and DC voltages only are detected out of balance.
  If the DC balance of the power stage is lost due to some cause, a potential difference develops between the two bases of the differential amplifier so that the collector currents of Q616 and Q617 become unbalanced, Thereby energizing either of the two diodes (D621, D622). As a result, a protection signal is generated.
- **Thermo Detector Circuit**
  This circuit detects abnormal rise of the heat sink panels. The heat sink panel is fitted with a posistor (TH551), by which a protection signal is generated if the heat sink temperature reaches about 95°C.
- **Protector Circuit**
  The above-mentioned protection signals are applied to the thyristor (D627) gate by the diode OR circuit.
  This thyristor (D627) operates to switch off the power applied to the oscillator of the DC-DC converter and thus stops the power supply to the secondary winding of the transformer.

• Block Diagram

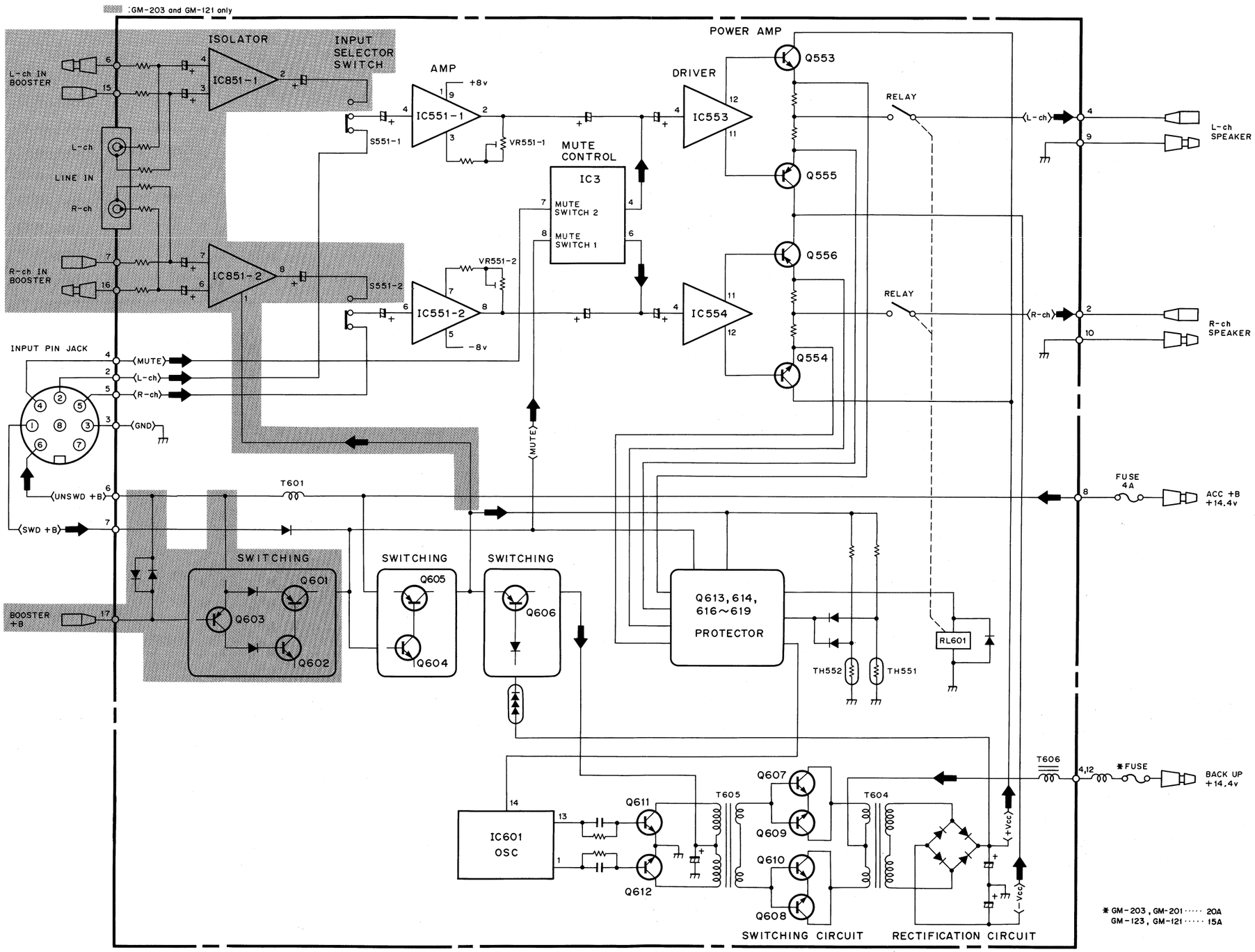


Fig. 6

- **Muting Operation**

IC552: TA7362P

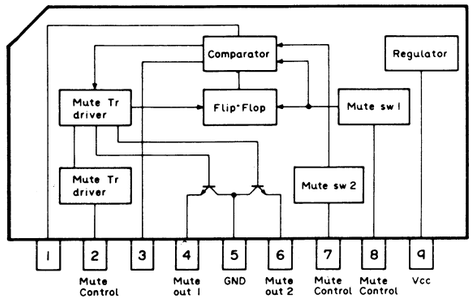
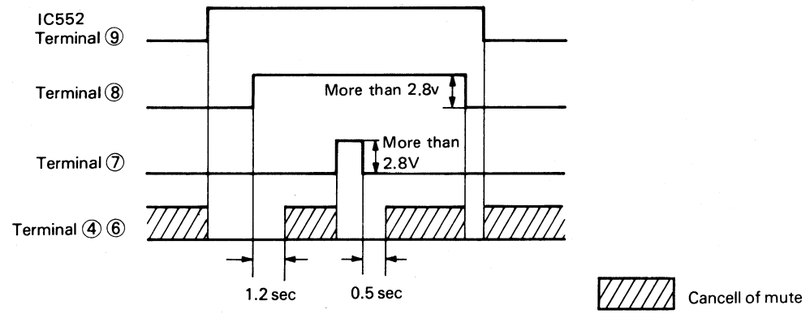


Fig. 7



(Timing of muting operation)

Fig. 8

- **Refer to figure 8 while reading the following description.**

1. When + B is supplied to the TO BATTERY terminal, a voltage is applied to terminal ⑨ of IC552, the muting transistor inside the IC is turned on and muting is activated.
2. When power is turned on to the external set, +B is supplied to pin ① of the connector. Muting is cancelled 1.2 seconds after the voltage at terminal ⑧ of IC552 reaches 2.8V or more.
3. When a muting output is generated in the external set, a voltage is applied from pin ④ of the connector to terminal ⑦ of IC552 and muting is activated when this voltage reaches 2.8V or more. Muting is cancelled 0.5 seconds after the voltage drops below 2.8V.
4. The muting restoration time is determined by the discharge time of the capacitor placed between terminals ① and ③ of IC552.

5 ADJUSTMENT

5.1 IDLE CURRENT ADJUSTMENT.

- **Connection Diagram**

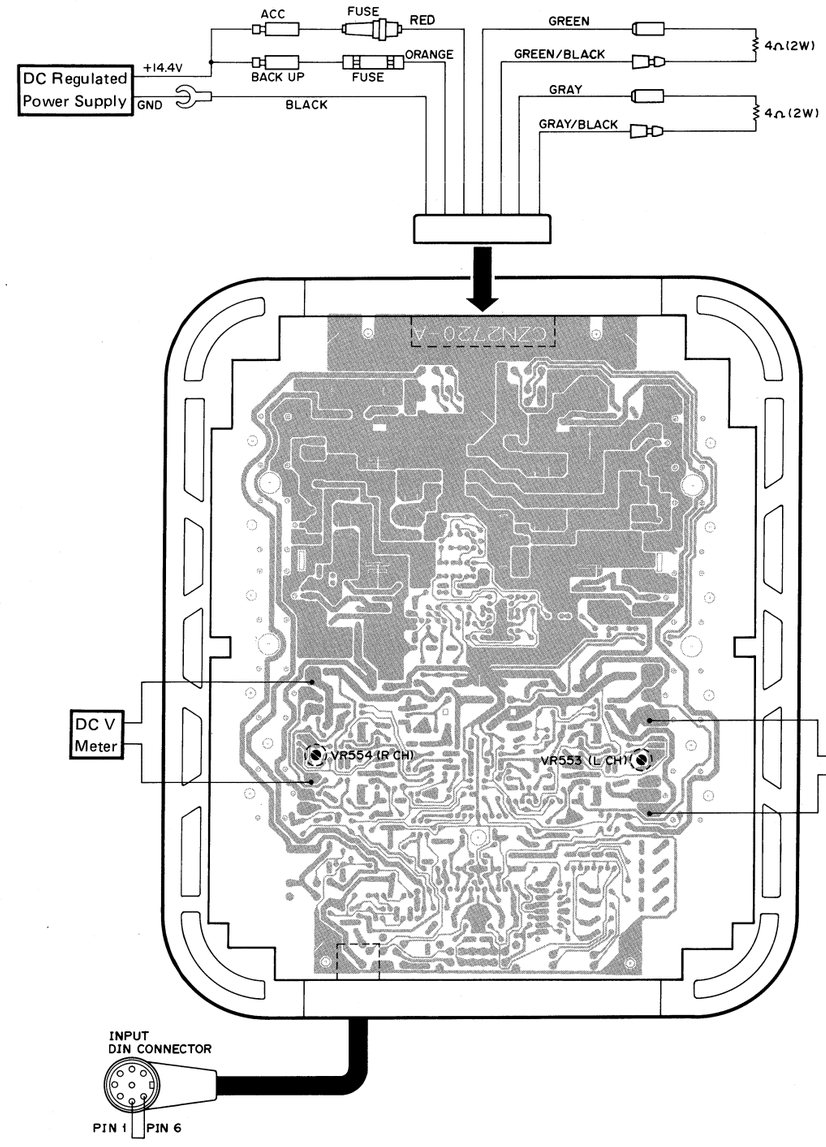


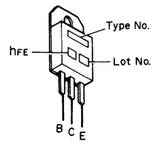
Fig. 9

- **To adjust**

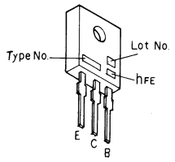
1. Adjust the VR 553 (L-ch) and VR554 (R-ch) until the DC volt meter reads 13 mV—14 mV.
2. Wait for two to three minutes, and verify that DC voltmeter reads 13 mV—14 mV.

• Ics and Transistors

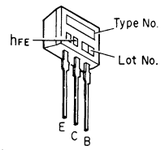
2SC3853
2SA1489
2SD718
2SB688



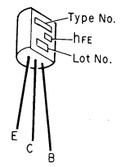
2SC1568



2SA1175
2SC2785



2SB647



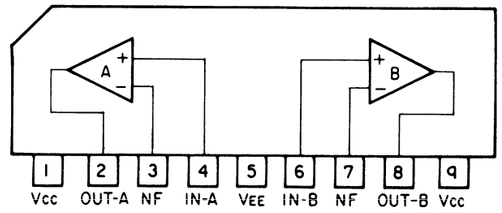
2SC2002
2SC1815

2SA683
2SC1383

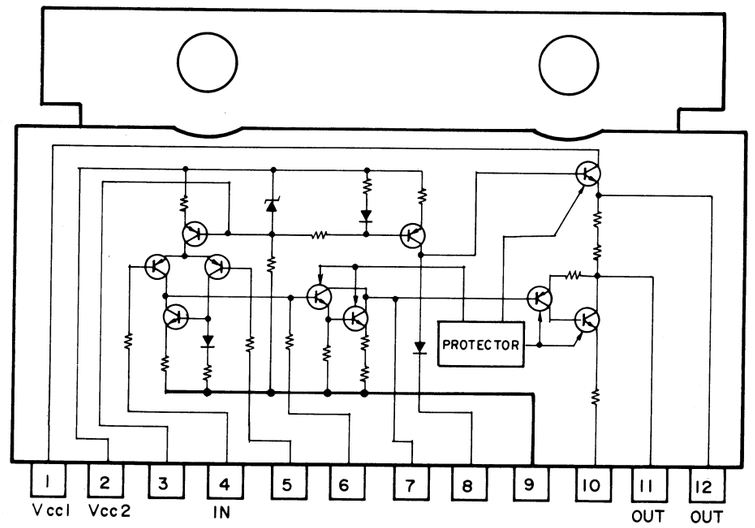
2SC3300

2SD1412

TA75558S

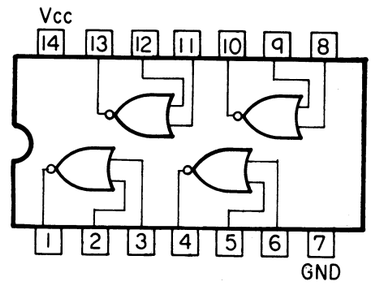


μPC1225H

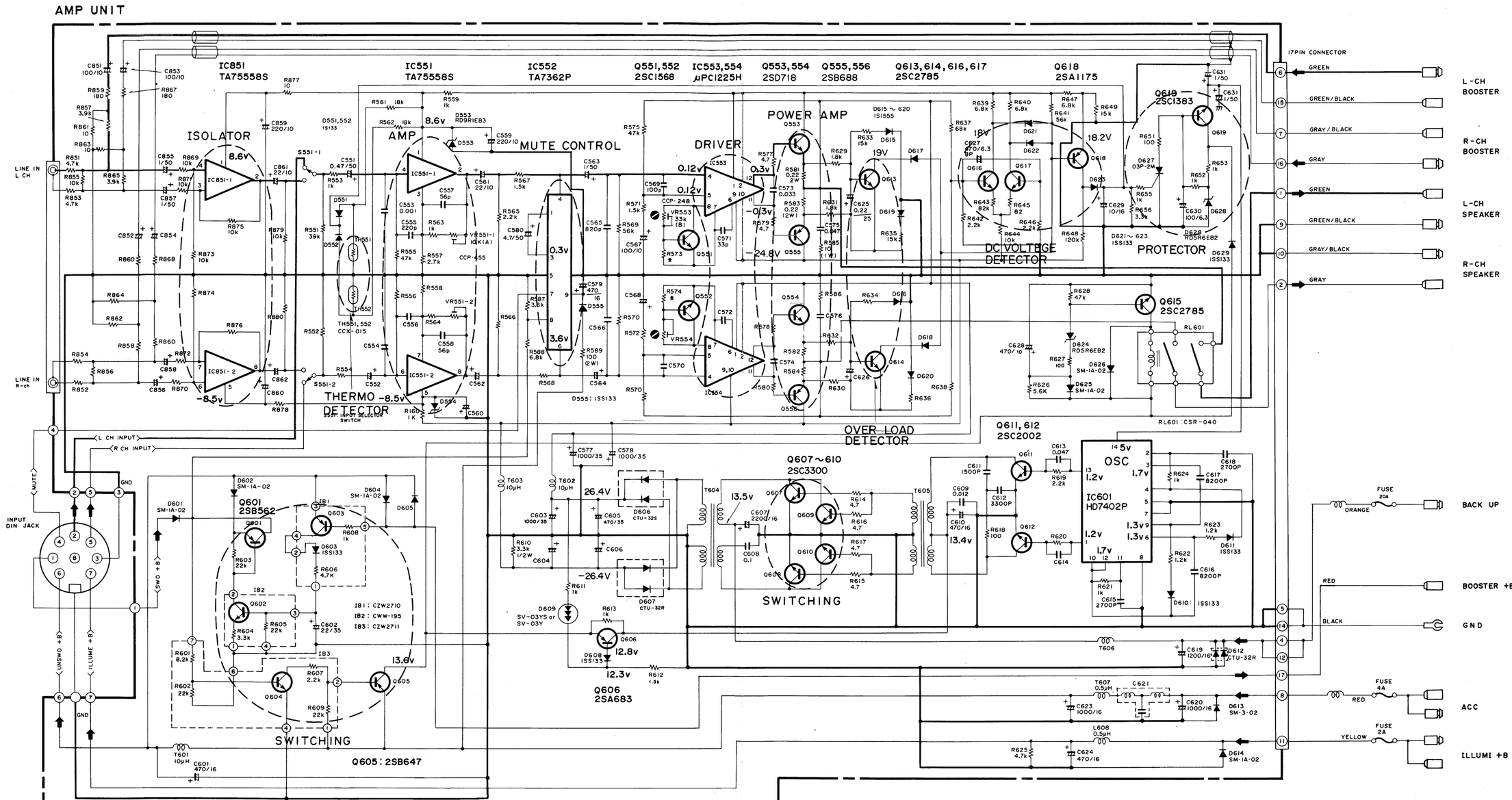


TA7362P (Shown in Fig. 7)

HD7402P



6. SCHEMATIC CIRCUIT DIAGRAM

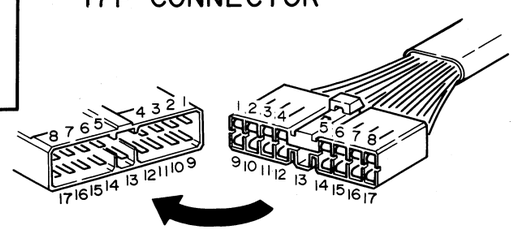


Switch

- **AMP UNIT**

S551: INPUT SELECTOR SWITCH .....LINE IN, BOOSTER—COMPONENT
The underlined indicates the switch position.

17P CONNECTOR

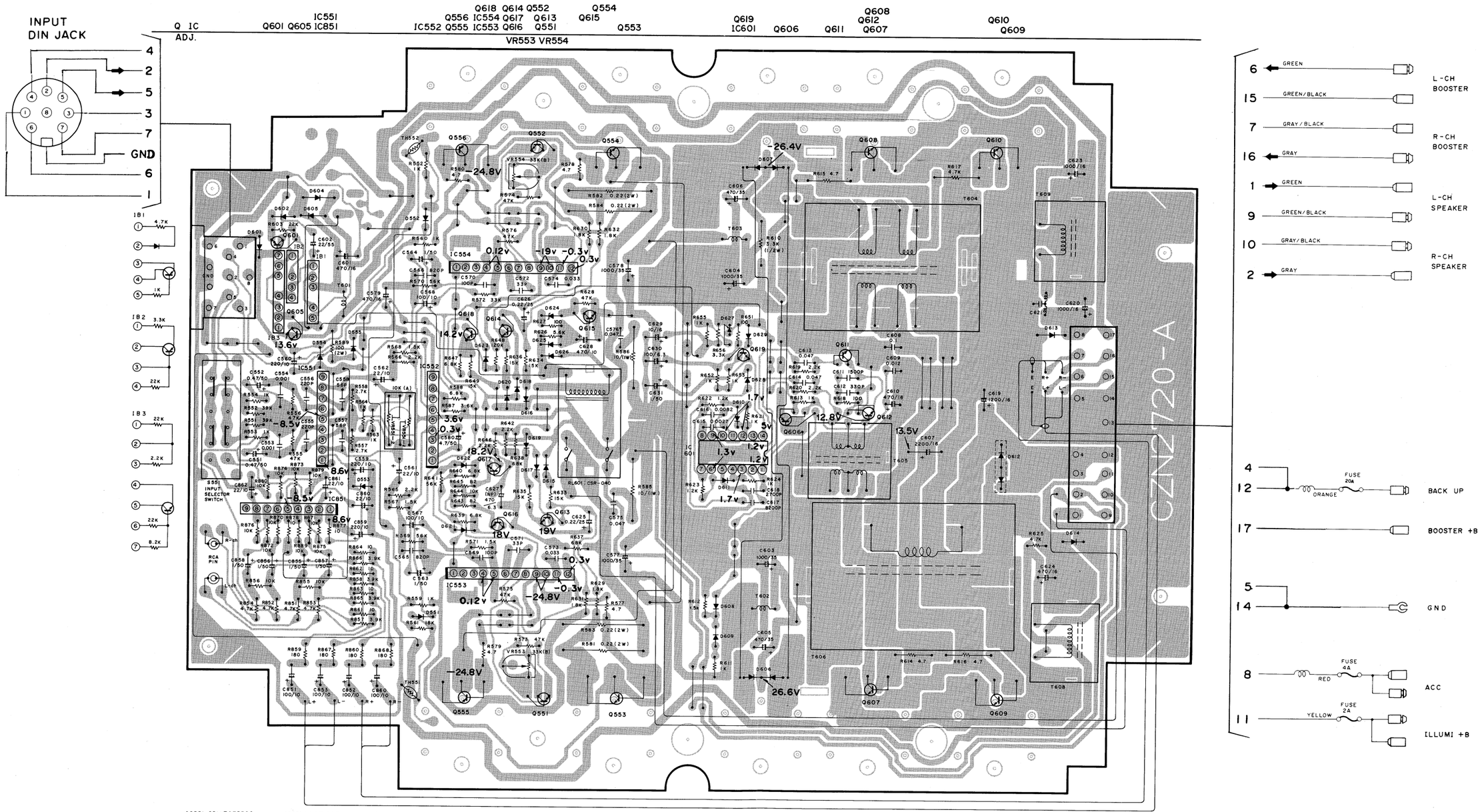


* Be sure to use Q553 554, 555 and 556 in the same rank when servicing.
Q553—556 and R573 and 574 used mutually in the following assembly.

Resistor \ Rank	S,T	Q,R
R573, 574	47 K	27 K

Fig. 10

7. CONNECTION DIAGRAM (GM-203)



IC551,851 : TA7558S
IC552 : TA7362P
IC553,554 : μPC1225H

IC601 : HD7402P

Q551,552 : 2SC1568
Q553,554 : 2SD718
Q555,556 : 2SB688

Q605 : 2SB647
Q606 : 2SA683
Q607 ~ Q610 : 2SC3300

Q611,612 : 2SC2002
Q613,614,616,617 : 2SC2785
Q615, 2SC1815
Q618 : 2SA1175
Q619 : 2SC1383

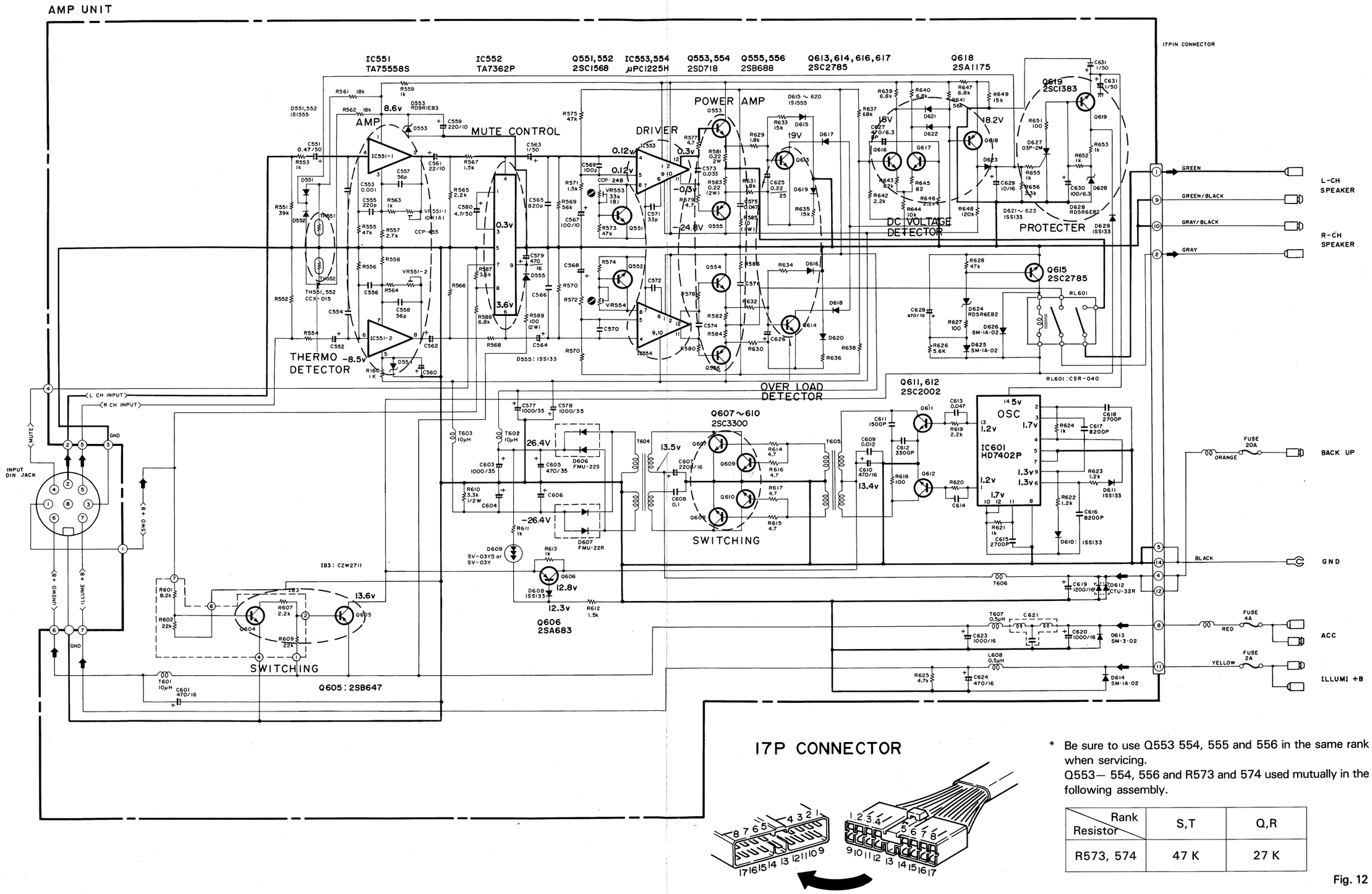
D551, 552, 555, 605, 608, 610, 611
615 ~ 623, 629 : 1SS133 or 1SS176
D601, 602, 614, 625, 626 : SM-1A-02

D604, 613 : SM-3-02
D606 : CTU-32S
D607 : CTU-32R
D609 : SV-03YS or SV-03Y
D612 : CTU-32R

D627 : 03P-2M
D624, 628 : RD5R6EB2
D553, 554 : RD9R1EB3

Fig. 11

8. SCHEMATIC CIRCUIT DIAGRAM (GM-201)



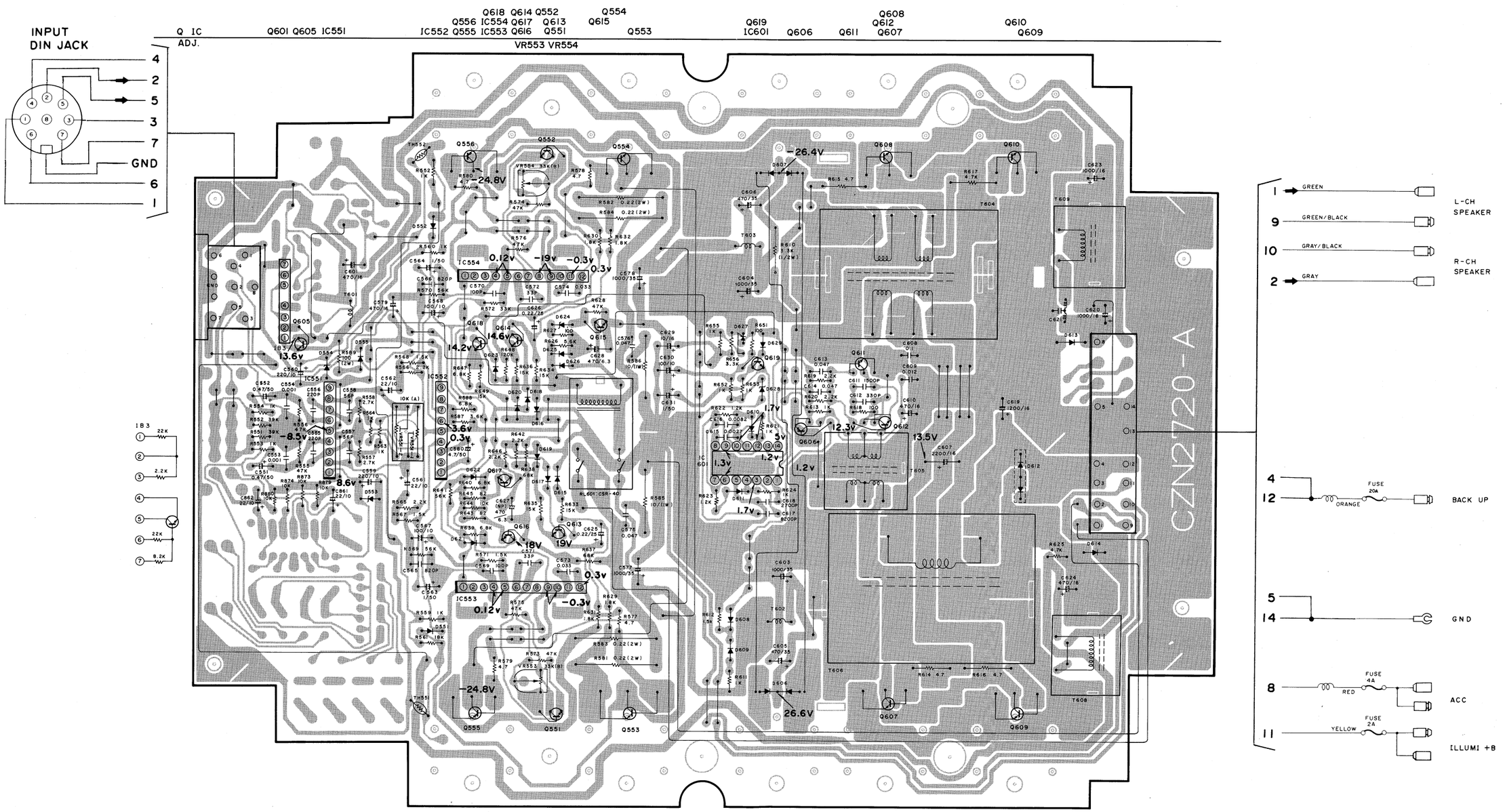
17P CONNECTOR

* Be sure to use Q553 554, 555 and 556 in the same rank when servicing.
Q553— 554, 556 and R573 and 574 used mutually in the following assembly.

Rank / Resistor	S,T	Q,R
R573, 574	47 K	27 K

Fig. 12

9. CONNECTION DIAGRAM (GM-201)



IC551 : TA7558S
IC552 : TA7362P
IC553,554 : μPC1225H

IC601 : HD7402P

Q551,552 : 2SC1568
Q553,554 : 2SD718
Q555,556 : 2SB688

Q605 : 2SB647
Q606 : 2SA683
Q607 ~ Q610 : 2SC3300

Q611,612 : 2SC2002
Q613,614,616,617 : 2SC2785
Q615 : 2SC1815
Q618 : 2SA1175
Q619 : 2SC1383

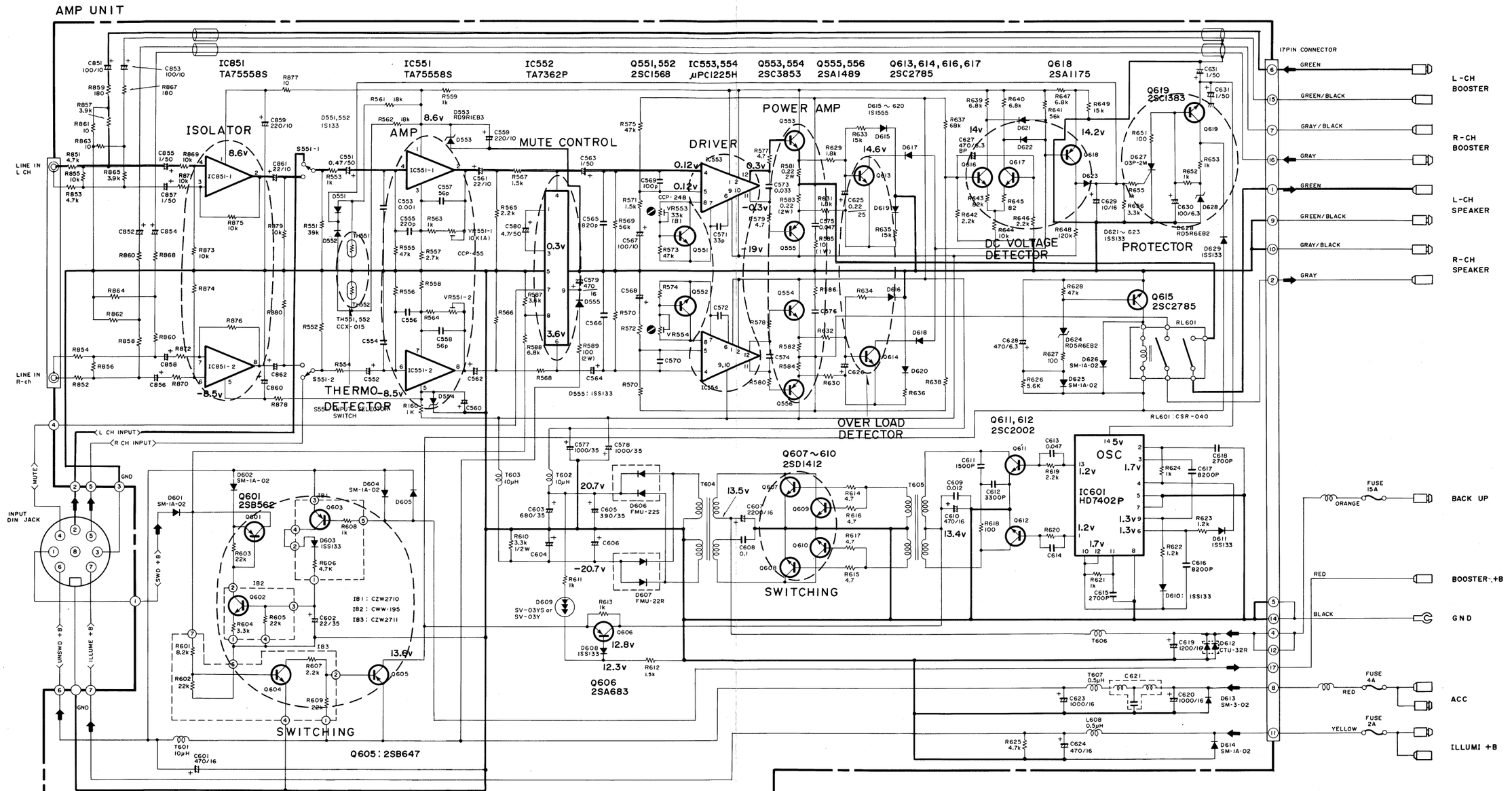
D551, 552, 555, 605, 608, 610, 611
615 ~ 623, 629 : 1SS133 or 1SS176
D614, 625, 626 : SM-1A-02

D604, 613 : SM-3-02
D606 : CTU-32S
D607 : CTU-32R
D609 : SV-03YS or SV-03Y
D612 : CTU-32R

D627 : 03P-2M
D624, 628 : RD5R6EB2
D553, 554 : RD9R1EB3

Fig. 13

10. SCHEMATIC CIRCUIT DIAGRAM (GM-123)



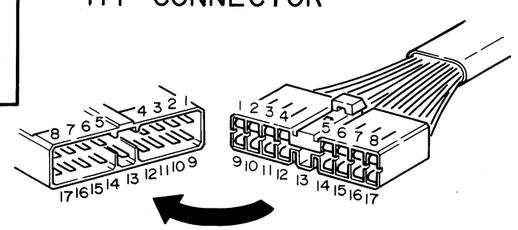
Switch

• AMP UNIT

S551: INPUT SELECTOR SWITCH ..... LINE IN, BOOSTER—COMPONENT

The underlined indicates the switch position.

17P CONNECTOR

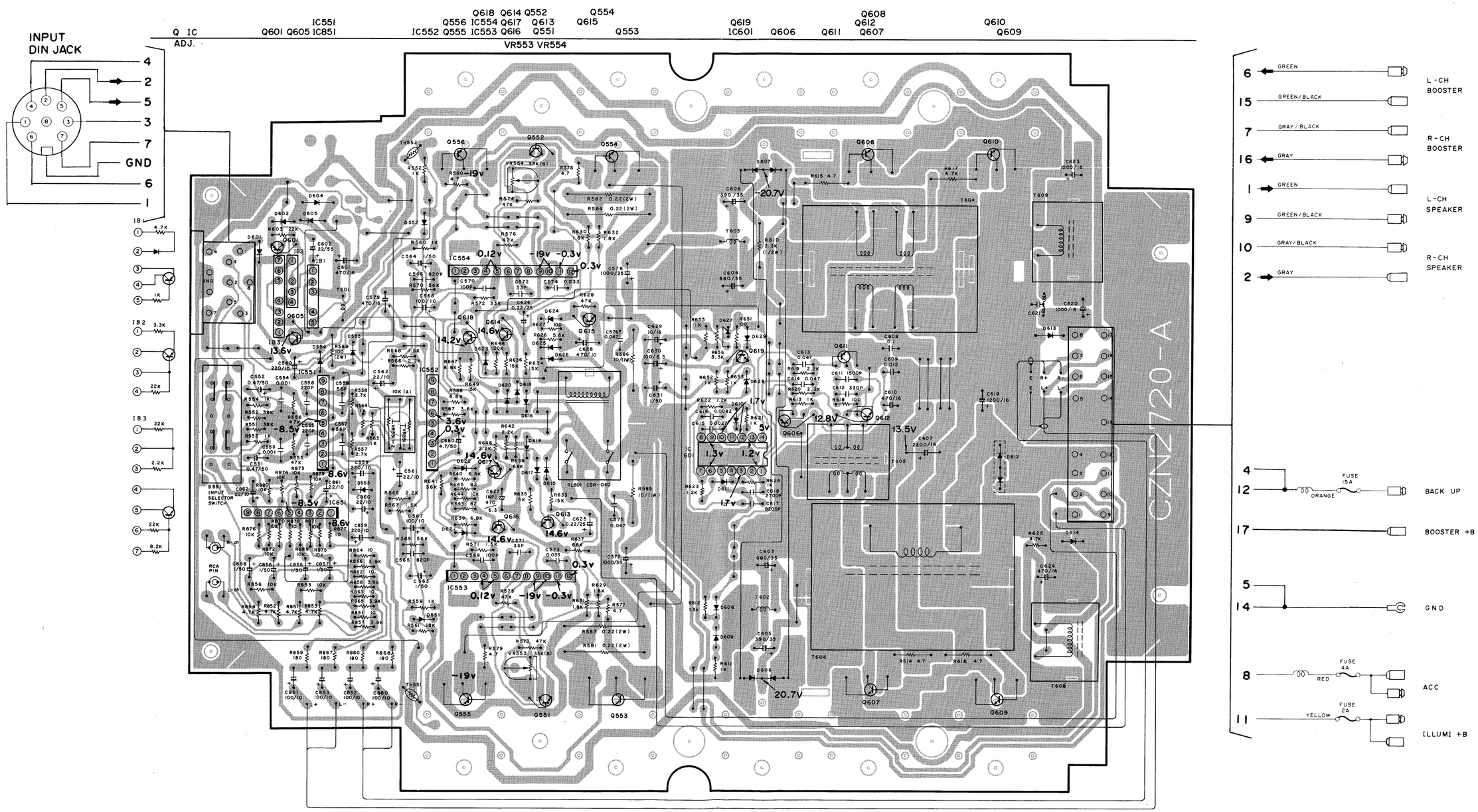


* Be sure to use Q553 554, 555 and 556 in the same rank when servicing.
Q553—556 and R573 and 574 used mutually in the following assembly.

Resistor \ Rank	S,T	Q,R
R573, 574	47 K	27 K

Fig. 14

11. CONNECTION DIAGRAM (GM-123)



IC551, 851 : TA7558S
IC552 : TA7362P
IC553, 554 : μPC1225H

IC601 : HD7402P

Q551, 552 : 2SC1568
Q553, 554 : 2SC3853
Q555, 556 : 2SA1489

Q605 : 2SB647
Q606 : 2SA683
Q607 ~ 610 : 2SD1412

Q611, 612 : 2SC2002
Q613, 614, 616, 617 : 2SC2785
Q615 : 2SC1815
Q618 : 2SA1175
Q619 : 2SC1383

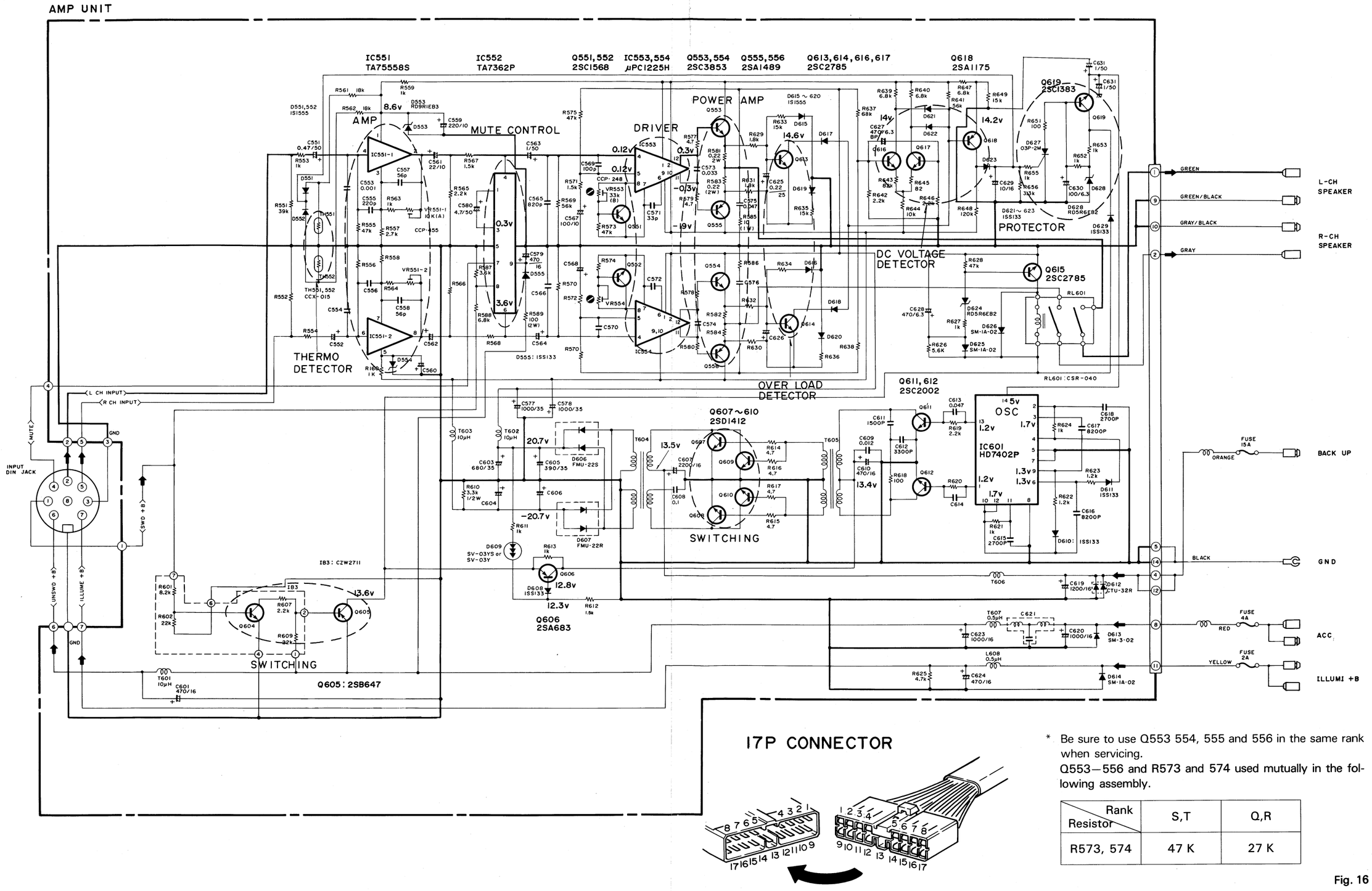
D551, 552, 555, 605, 608, 610, 611
615 ~ 623, 629 : 1SS133 or 1SS176
D601, 602, 614, 625, 626 : SM-1A-02

D604, 613 : SM-3-02
D606 : FMU-22S
D607 : FMU-22R
D609 : SV-03YS or SV-03Y
D612 : CTU-32R

D627 : 03P-2M
D624, 628 : RD5R6EB2
D553, 554 : RD9R1EB3

Fig. 15

12. SCHEMATIC CIRCUIT DIAGRAM (GM-121)



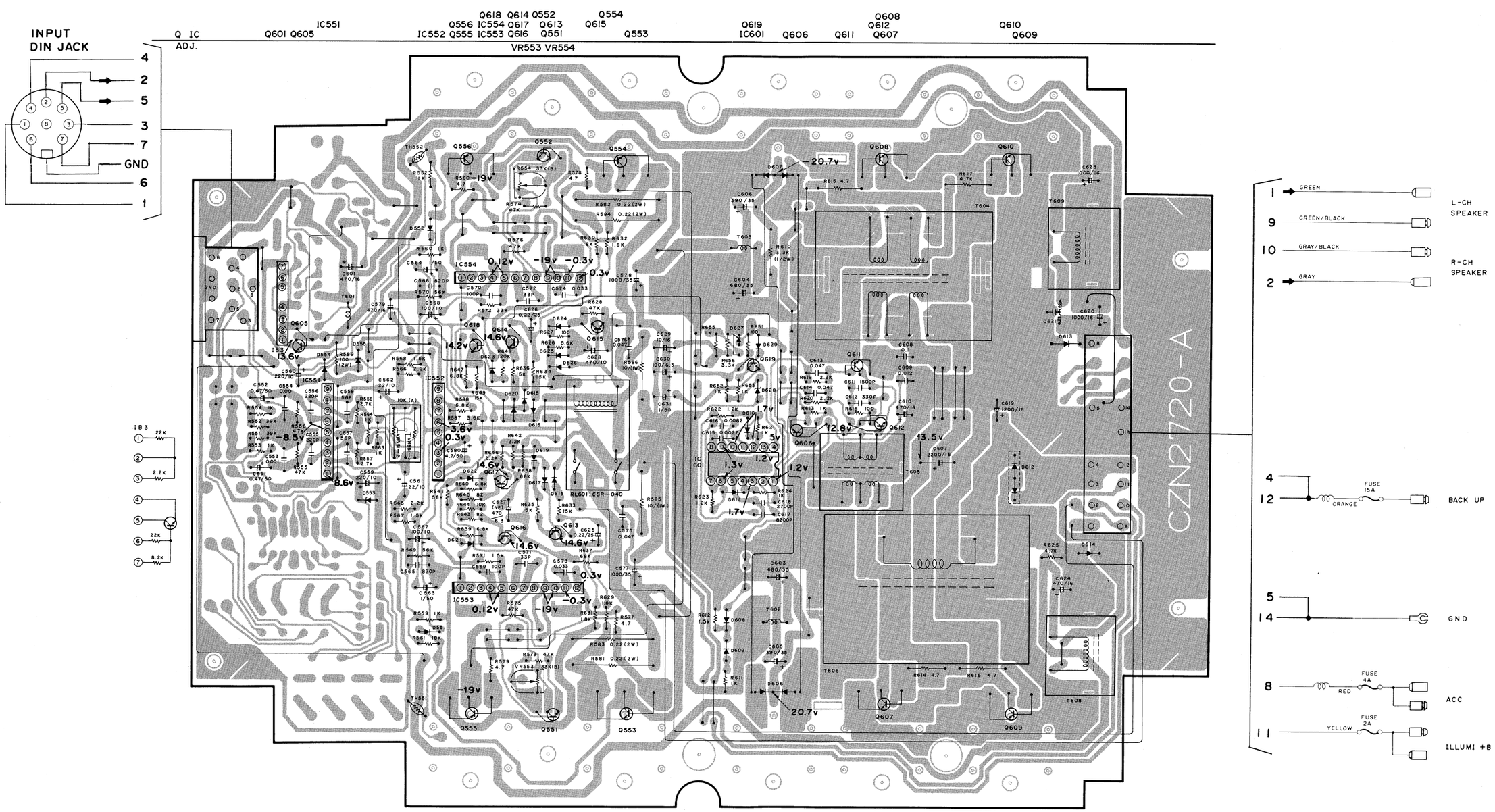
17P CONNECTOR

* Be sure to use Q553 554, 555 and 556 in the same rank when servicing.
Q553—556 and R573 and 574 used mutually in the following assembly.

Resistor \ Rank	S,T	Q,R
R573, 574	47 K	27 K

Fig. 16

13. CONNECTION DIAGRAM (GM-121)



IC551 : TA7558S
IC552 : TA7362P
IC553,554 : μPC1225H

IC601 : HD7402P

Q551,552 : 2SC1568
Q553,554 : 2SC3853
Q555,556 : 2SA1489

Q605 : 2SB647
Q606 : 2SA683
Q607,610 : 2SD1412
Q607~601 : 2SD1412

Q611,612 : 2SC2002
Q613,614,616,617 : 2SC2785
Q615 : 2SC1815
Q618 : 2SA1175
Q619 : 2SC1383

D551, 552, 555, 605, 608, 610, 611
615~623, 629 : 1SS133 or 1SS176
D614, 625, 626 : SM-1A-02

D604, 613 : SM-3-02
D606 : FMU-22S
D607 : FMU-22R
D609 : SV-03YS or SV-03Y
D612 : CTU-32R

D627 : 03P-2M
D624, 628 : RD5R6EB2
D553, 554 : RD9R1EB3

Fig. 17

14. EXPLODED VIEW

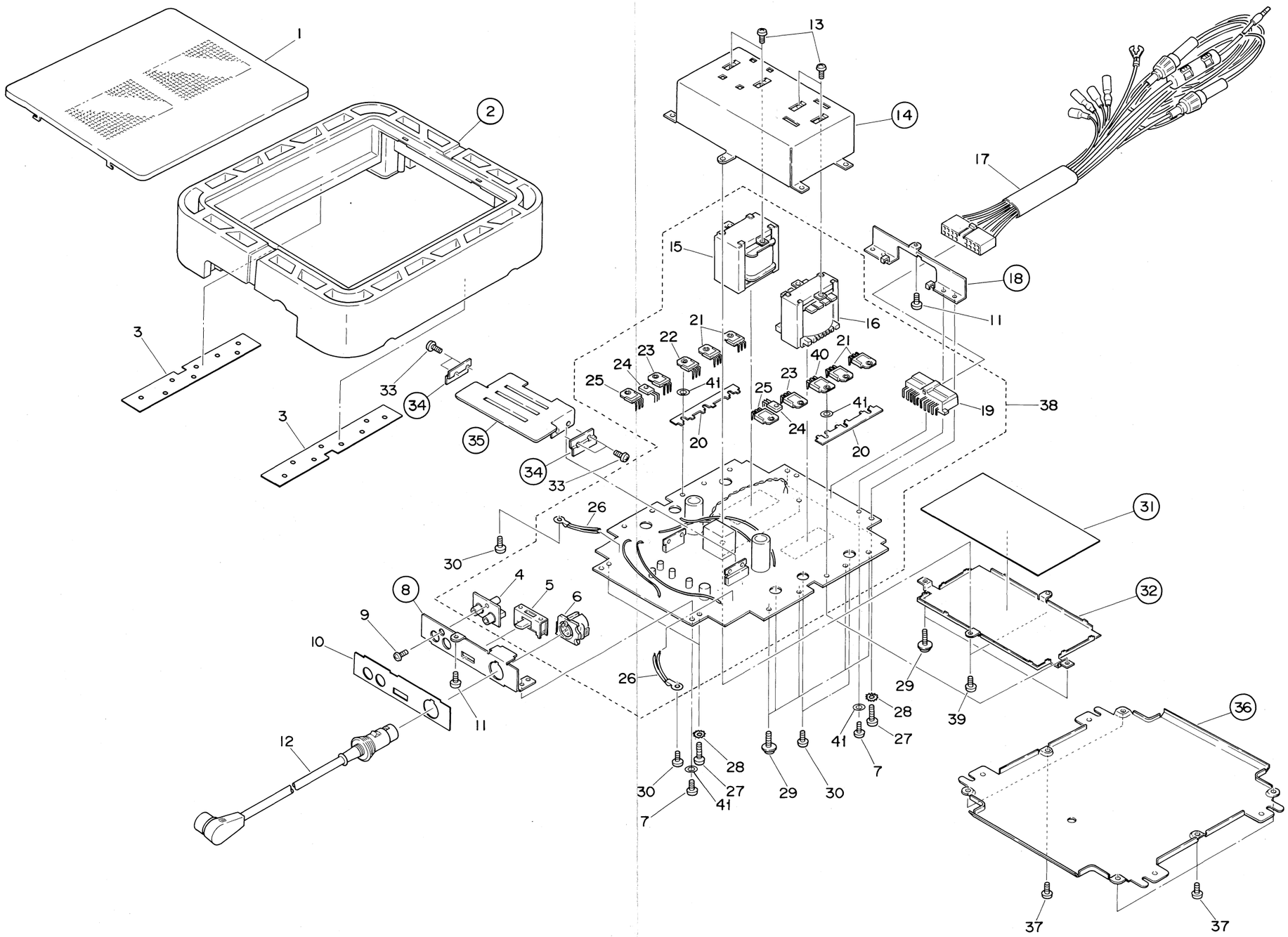


Fig. 18

• Parts List

NOTE:

- *For your Parts Stock Control, the fast moving items are indicated with the marks ★ ★ and ★.*
  ★ ★: GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts whose parts numbers are omitted are subject to being not supplied.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

Mark	No.	Part No.	Description
	1.	CZN2718	Case (GM-203)
		CZN2704	Case (GM-201)
		CZN2717	Case (GM-123)
		CZN2703	Case (GM-121)
	2.		Heat Sink (GM-203, GM-201)
			Heat Sink (GM-123, GM-121)
	3.	CZN2712	Rubber
	4.	CKB-013	Pin Jack (2P) (GM-203, GM-123)
	5.	HSH-119	Switch (INPUT SELECTOR) (GM-203, GM-123)
	6.	CKS-549	DIN JACK
	7.	CBA-124	Screw
	8.		Bracket
	9.	CBZ30P050FMC	Screw
	10.	CZN2716	Panel (GM-203, GM-123)
		CZN2715	Panel (GM-201, GM-121)
	11.	BBZ30P080FZK	Screw
	12.	CZD2708	DIN Cord (GM-201)
		CZD2707	DIN Cord (GM-121)
	13.	BMZ30P050FZK	Screw
	14.		Shield Case (GM-203, GM-201)
			Shield Case (GM-123, GM-121)
	15.	CZT2704	Coil (GM-203, GM-201)
		CZT2703	Coil (GM-123, GM-121)
	16.	CZT2702	Transformer (GM-203, GM-201)
		CZT2701	Transformer (GM-123, GM-121)
	17.	CZD2706	Cord (GM-203)
		CZD2705	Cord (GM-201)
		CZD2703	Cord (GM-123)
		CZD2702	Cord (GM-121)
	18.		Bracket
	19.	CKS-548	Connector
	20.	CZN2714	Spacer (GM-123, GM-121)
★★	21.	2SC3300	Transistor (GM-203, GM-201)
★★		2SD1412	Transistor (GM-123, GM-121)
★	22.	CTU-32S	Diode (GM-203, GM-201)
★		FMU-22S	Diode (GM-123, GM-121)
★★	23.	2SD718	Transistor (GM-203, GM-201)
★★		2SC3853	Transistor (GM-123, GM-121)
★★	24.	2SC1568	Transistor
★★	25.	2SB688	Transistor (GM-203, GM-201)
★★		2SA1489	Transistor (GM-123, GM-121)
★	26.	CCX-015	Posistor
	27.	BBZ30P080FMC	Screw
	28.	WH30FUC	Washer
	29.	AMZ30P120FMC	Screw
	30.	BBZ30P080FMC	Screw
	31.		Insulator (GM-201, GM-121)
	32.		Shield Case (GM-201, GM-121)
	33.	BMZ30P050FMC	
	34.		Holder
	35.		Heat Sink
	36.		Case
	37.	BBZ30P080FMC	Screw
◉	38.	CZW2706	Amp Unit (GM-203)
◉		CZW2705	Amp Unit (GM-201)
◉		CZW2703	Amp Unit (GM-123)
◉		CZW2702	Amp Unit (GM-121)
	39.	BMZ30P050FMC	Screw
★	40.	CTU-32R	Diode (GM-203, GM-201)
★		FMU-22R	Diode (GM-123, GM-121)
	41.	WB30FMC	Washer

15. ELECTRICAL PARTS LIST

NOTE:

When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω	*56 × 10¹*	*561*	*RD1/4PS 5 6 1 J*
47kΩ	*47 × 10³*	*473*	*RD1/4PS 4 7 3 J*
0.5Ω	*0R5*		*RN2H 0 R 5 K*
1Ω	*010*		*RS1P 0 1 0 K*

Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	*562 × 10¹*		*RN1/4SR 5 6 2 1 F*

- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★: GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts whose parts numbers are omitted are subject to being not supplied.*

Amp Unit (GM-203)

MISCELLANEOUS

Mark	Symbol & Description	Part No.
★★	IC551, 851	TA75558S
★★	IC552	TA7362P
★★	IC553, 554	μPC1225H
★★	IC601	HD7402P
★★	Q551, 552	2SC1568
★★	Q553, 554	2SD718
★★	Q555, 556	2SB688
★★	Q605	2SB647
★★	Q606	2SA683
★★	Q607—610	2SC3300
★★	Q611, 612	2SC2002
★★	Q613, 614, 616, 617	2SC2785
★★	Q618	2SA1175
★★	Q615	2SC1815
★★	Q619	2SC1383
★	D551, 552, 555, 605, 608, 610, 611, 615—623, 629	1SS133 or 1SS176
★	D553, 554	RD9R1EB2
★	D601, 602, 614, 625, 626	SM-1A-02 or ERA15-02
★	D604	SM-3-02
★	D606	CTU-32S
★	D607	CTU-32R
★	D609 Varistor Diode	SV-03Y or SV-03YS
★	D612	CTU-32R
★	D624, 628	RD5R6EB3
★	D627 Thyristor	03P-2M
★	TH551, 552 Posistor	CCX-015
	T601—603 Coil	CZT2705
	T604 Transformer	CZT2702
	T605 Transformer	CTH-061
	T606 Coil	CZT2704
	T607, 608 Coil	CTF-002
★★	VR551 Semi-fixed, 10 kΩ (B)	CCP-455
★★	VR553, 554 Semi-fixed, 33 kΩ (B)	CCP-248
	RL601 Relay	CSR-040
★★	S551 Switch (INPUT SELECTOR SWITCH)	HSH-119
	IB1	CZW2710
	IB2	CWW-195
	IB3	CZW2711

RESISTORS

Mark	Symbol & Description	Part No.
	R581—584, 589	RN2P□□□J
	R585, 586	RN1P□□□J
	R610	RD1/2PS□□□J
	Other Resistors	RD1/4PS□□□JL

CAPACITORS

Mark	Symbol & Description	Part No.
	C551, 552	CEAR47M50L2
	C553, 554	CKDYB102K50
	C555, 556	CKDYB221K50
	C557, 558	CKDYB560K50
	C559, 560	CEA221M10L2
	C561, 562	CEA220M16L2
	C563, 564, 631, 855–858	CEA010M50L2
	C565, 566	CKDYB821K50
	C567, 568	CEA101M50L2
	C569, 570	CKDYB101K50
	C571, 572	CKDYB330K50
	C573, 574	CQMA333K50
	C575, 576, 613, 614	CQMA473K50
	C577, 578	CEA102M35L2
	C579, 601, 610, 624	CEA471M16L2
	C580	CEA4R7M50L2
	C602	CEA220M35L2
	C603, 604 1000 µF/35 V	CZC2702
	C605, 606 470 µF/35 V	CZC2704
	C607 2200 µF/16 V	CZC2705
	C608	CQMA104K50
	C609	CQMA123K50
	C611	CQMA152K50
	C612	CQMA332K50
	C615, 618	CQMA272K50
	C616, 617	CQMA822K50
	C619 1200 µF/16 V	CZC2706
	C620, 623	CEA102M16L2
	C621	CCG-105
	C624 470 µF/16 V	CZC2707
	C625, 626	CSZAR22M35
	C627	CEA471M6R3NP
	C628	CEA471M10L2
	C629	CEA100M16L2
	C630, 851–854	CEA101M10L2
	C859, 860	CEA221M16L2
	C861, 862	CEA220M10L2

* Be sure to use Q553, 554 555 and 556 in the same rank when servcing.
Q553–556 and R573 and 574 used mutually in the following assembly.

Rank / Resistor	S,T	Q,R
R573, 574	47 K	27 K

Amp Unit (GM-201)

MISCELLANEOUS

Mark	Symbol & Description	Part No.
★★	IC551	TA75558S
★★	IC552	TA7362P
★★	IC553, 554	µPC1225H
★★	IC601	HD7402P
★★	Q551, 552	2SC1568
★★	Q553, 554	2SD718
★★	Q555, 556	2SB688
★★	Q605	2SB647
★★	Q606	2SA683
★★	Q607–610	2SC3300
★★	Q611, 612	2SC2002
★★	Q613, 614, 616, 617	2SC2785
★★	Q615	2SC1815
★★	Q618	2SA1175
★★	Q619	2SC1383
★	D551, 552, 555, 608, 610, 611, 615–623, 629	1SS133 or 1SS176
★	D553, 554	RD9R1EB2
★	D604	SM-3-02
★	D606	CTU-32S
★	D607	CTU-32R
★	D609 Varistor Diode	SV-03Y or SV-03YS
★	D612	CTU-32R
★	D613	SM-3-02
★	D614, 625, 626	SM-1A-02 or ERA15-02
★	D624, 628	RD5R6EB3
★	D627 Thyristor	03P-2M
★	TH551, 552 Posistor	CCX-015
	T601–603 Coil	CZT2705
	T604 Transformer	CZT2702
	T605 Transformer	CTH-061
	T606 Coil	CZT2704
	T607, 608 Coil	CTF-002
★★	VR551 Semi-fixed, 10 kΩ (B)	CCP-455
★★	VR553, 554 Semi-fixed, 33 kΩ (B)	CCP-248
	RL601 Relay	CSR-040
	IB3	CZW2711

RESISTORS

Mark	Symbol & Description	Part No.
	R581–584, 589	RN2P□□□J
	R585, 586	RN1P□□□J
	R610	RD1/2PS□□□J
	Other Resistors	RD1/4PS□□□JL

CAPACITORS

Mark	Symbol & Description	Part No.
	C551, 552	CEAR47M50L2
	C553, 554	CKDYB102K50
	C555, 556	CKDYB221K50
	C557, 558	CKDYB560K50
	C559, 560	CEA221M10L2
	C561, 562	CEA220M16L2
	C563, 564, 631	CEA010M50L2
	C565, 566	CKDYB821K50
	C567, 568	CEA101M10L2
	C569, 570	CKDYB101K50
	C571, 572	CKDYB330K50
	C573, 574	CQMA333K50
	C575, 576, 613, 614	CQMA473K50
	C577, 578	CEA102M35L2
	C579, 601, 610, 624	CEA471M16L2
	C580	CEA4R7M50L2
	C603, 604 1000 µF/35 V	CZC2702
	C605, 606 470 µF/35 V	CZC2704
	C607 2200 µF/16 V	CZC2705
	C608	CQMA104K50
	C609	CQMA123K50
	C611	CQMA152K50
	C612	CQMA332K50
	C615, 618	CQMA272K50
	C616, 617	CQMA822K50
	C619 1200 µF/16 V	CZC2706
	C620, 623	CEA102M16L2
	C621	CCG-105
	C624 470 µF/16 V	CZC2707
	C625, 626	CSZAR22M35
	C627	CEA471M6R3NP
	C628	CEA471M10L2
	C629	CEA100M16L2
	C630	CEA101M10L2

* Be sure to use Q553, 554, 555 and 556 in the same rank when servicing.
Q553—556 and R573 and 574 used mutually in the following assembly.

Rank / Resistor	S,T	Q,R
R573, 574	47 K	27 K

Amp Unit (GM-123)

MISCELLANEOUS

Mark	Symbol & Description	Part No.
★★	IC551, 851	TA75558S
★★	IC552	TA7362P
★★	IC553, 554	µPC1225H
★★	IC601	HD7402
★★	Q551, 552	2SC1568
★★	Q553, 554	2SC3853
★★	Q555, 556	2SA1489
★★	Q605	2SB647
★★	Q607—610	2SD1412
★★	Q661, 612	2SC2002
★★	Q613, 614, 616, 617	2SC2785
★★	Q618	2SA1175
★★	Q615	2SC1815
★★	Q619	2SC1383
★	D551, 552, 555, 605, 608, 610,	1SS133 or
	611, 615—623, 629	1SS176
★	D553, 554	RD9R1EB2
★	D601, 602, 614, 625, 629	SM-1A-02 or ERA15-02
★	D604	SM-3-02
★	D606	FMU-22S
★	D607	FMU-22R
★	D609 Varistor Diode	SV-03Y or SV-03YS
★	D612	CTU-22R
★	D624, 628	RD5R6EB3
★	D627 Thyristor	03P-2M
★	TH551, 552 Posistor	CCX-015
	T601—603 Coil	CZT2705
	T604 Transformer	CZT2701
	T605 Transformer	CTH-061
	T606 Coil	CZT2703
	T607, 608 Coil	CTF-002
★★	VR551 Semi-fixed, 10 kΩ (B)	CCP-455
★★	VR553, 554 Semi-fixed, 33 kΩ (B)	CCP-248
	RL601 Relay	CSR-040
★★	S551 Switch (INPUT SELECTOR SWITCH)	HSH-119
	IB1	CZW2710
	IB2	CWW-195
	IB3	CZW2711

RESISTORS

Mark	Symbol & Description	Part No.
	R581–584, 589	RN2P□□□J
	R585, 586	RN1P□□□J
	R610	RD1/2PS□□□J
	Other Resistors	RD1/4PS□□□JL

CAPACITORS

Mark	Symbol & Description	Part No.
	C551, 552	CEAR47M50L2
	C553, 554	CKDYB221K50
	C555, 556	CKDYB560K50
	C557, 558	CKDYB560K50
	C559, 560, C859, 860	CEA221M10L2
	C561, 562	CEA220M16L2
	C563, 564, 631, 855–858	CEA010M50L2
	C565, 566	CKDYB821K50
	C567, 568	CEA101M50L2
	C569, 570	CKDYB101K50
	C571, 572	CKDYB330K50
	C573, 574	CQMA333K50
	C575, 576, 613, 614	CQMA473K50
	C577, 578	CEA102M35L2
	C579, 601, 610, 624	CEA471M16L2
	C580	CEA4R7M50L2
	C602, 603, 604, 680 μF/35 V	CEA220M35L2
		CZC2701
	C605, 606 390 μF/35 V	CZC2703
	C607 2200 μF/16 V	CZC2705
	C608	CQMA104K50
	C609	CQMA123K50
	C611	CQMA152K50
	C612	CQMA332K50
	C615, 618	CQMA272K50
	C616, 617	CQMA822K50
	C619 1200 μF/16 V	CZC2706
	C620, 623	CEA102M16L2
	C621	CCG-105
	C624 470 μF/16 V	CZC2707
	C625, 626	CSZAR22M35
	C627	CEA471M6R3NP
	C628	CEA471M10L2
	C629	CEA100M16L2
	C630, 851–854	CEA101M10L2
	C861, 862	CEA220M10L2

* Be sure to use Q553, 554, 555 and 556 in the same rank when servicing.
Q553–556 and R573 and 574 used mutually in the following assembly.

Resistor \ Rank	S,T	Q,R
R573, 574	47 K	27 K

Amp Unit (GM-121)

MISCELLANEOUS

Mark	Symbol & Description	Part No.
★★	IC551	TA75558S
★★	IC552	TA7362P
★★	IC553, 554	μPC1225H
★★	IC601	HD7402P
★★	Q551, 552	2SC1568
★★	Q553, 554	2SC3853
★★	Q555, 556	2SA1489
★★	Q605	2SB647
★★	Q606	2SA683
★★	Q607–610	2SD1412
★★	Q611, 612	2SC2002
★★	Q613, 614, 616, 617	2SC2785
★★	Q615	2SC1815
★★	Q618	2SA1175
★★	Q619	2SC1383
★	D551, 552, 555, 608, 611, 615–623, 629	1SS133 or 1SS176
★	D553, 554	RD9R1EB2
★	D604	SM-3-02
★	D606	FMU-22S
★	D607	FMU-22R
★	609 Varistor Doide	SV-03Y or SV-03YS
★	D612	CTU-32R
★	D614, 625, 626	SM-1A-02 or ERA15-02
★	D624, 628	RD5R6EB3
★	D627 Thyristor	03P-2M
★	TH551, 552 Posistor	CCX-015
	T601–603 Coil	CZT2705
	T604 Transformer	CZT2701
	T605 Transformer	CTH-061
	T606 Coil	CZT2703
	T607, 608 Coil	CTF-002
★★	VR551, Semi-fixed, 10 kΩ(B)	CCP-455
★★	VR553, 554 Semi-fixed, 33 kΩ(B)	CCP-248
	RL601 Relay	CSR-040
	IB3	CZW2711

RESISTORS

Mark	Symbol & Description	Part No.
	R581–584, 589	RN2P□□□J
	R585, 586	RN1P□□□J
	R610	RD1/2PS□□□J
	Other Resistors	RD1/4PS□□□JL

CAPACITORS

Mark	Symbol & Description	Part No.
	C551, 552	CEAR47M50L2
	C553, 554	CKDYB102K50
	C555, 556	CKDYB221K50
	C557, 558	CKDYB560K50
	C559, 560	CEA221M10L2
	C561, 562	CEA220M16L2
	C563, 564, 631	CEA010M50L2
	C565, 566	CKDYB821K50
	C567, 568	CEA101M10L2
	C569, 570	CKDYB101K50
	C571, 572	CKDYB330K50
	C573, 574	CQMA333K50
	C575, 576, 613, 614	CQMA473K50
	C577, 578	CEA102M35L2
	C579, 601, 610, 624	CEA471M16L2
	C580	CEA4R7M50L2
	C603, 604 680μF/35 V	CZC2701
	C605, 606 390μF/35 V	CZC2703
	C607 2200μF/16 V	CZC2705
	C608	CQMA104K50
	C609	CQMA123K50
	C611	CQMA152K50
	C612	CQMA332K50
	C615, 618	CQMA272K50
	C616, 617	CQMA822K50
	C619 1200μF/16 V	CZC2706
	C620, 623	CEA102M16L2
	C621	CCG-105
	C624 470μF/16 V	CZC2707
	C625, 626	CSZAR22M35
	C627	CEA471M6R3NP
	C628	CEA471M10L2
	C629	CEA100M16L2
	C630	CEA101M10L2

* Be sure to use Q553, 554 555 and 556 in the same rank when servicing.
Q553—556 and R573 and 574 used mutually in the following assembly.

Rank / Resistor	S,T	Q,R
R573, 574	47 K	27 K

16. PACKING METHOD

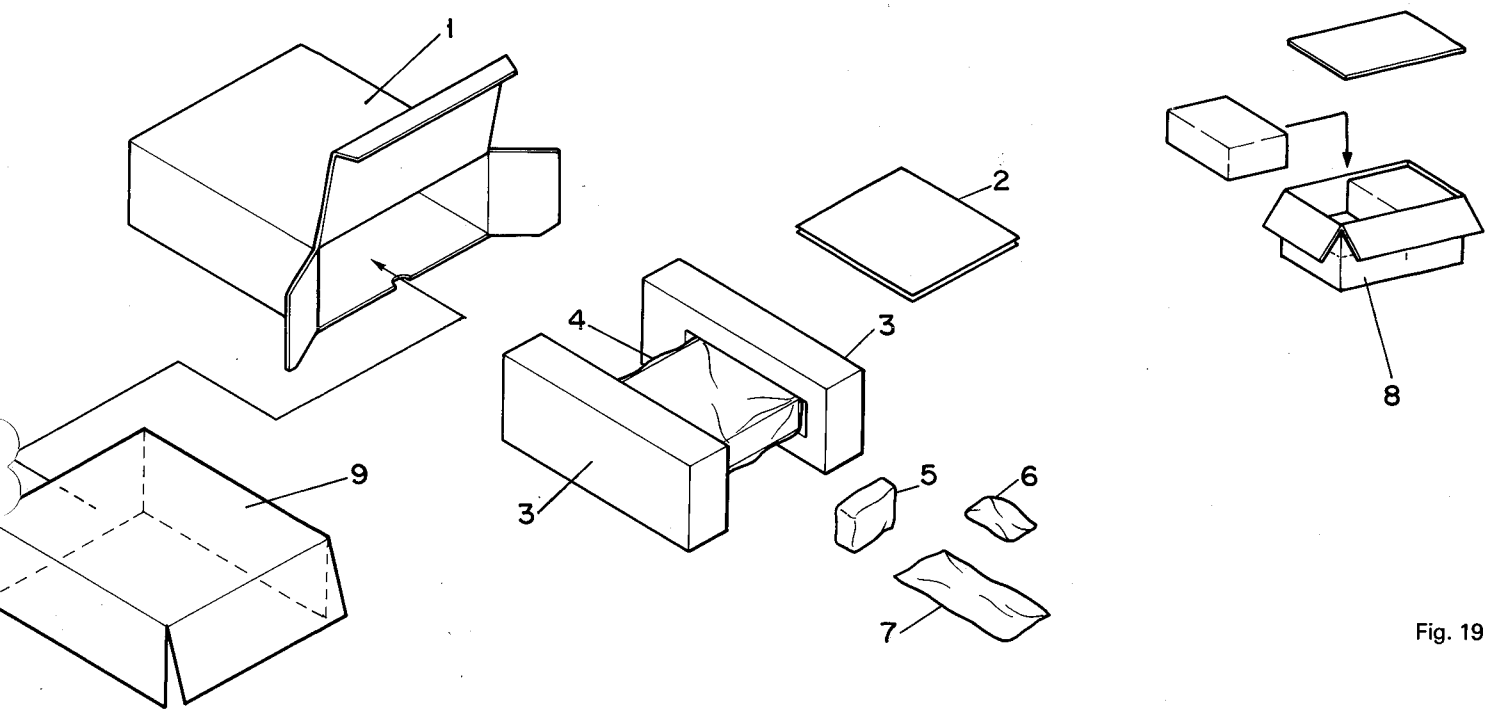


Fig. 19

• Parts List

Mark	No.	Part No.	Description
	1.	CZN2714	Carton (GM-203/US)
		CZH2713	Carton (GM-201/EW)
		CZH2710	Carton (GM-123/US)
		CZH2709	Carton (GM-123/CA)
		CZH2711	Carton (GM-123/ES)
		CZH2708	Carton (GM-121/EW)
	2.	CZR2707	Owner's Manual (GM-203/US)
		CZR2706	Owner's Manual (GM-201/EW)
		CZR2703	Owner's Manual (GM-123/US, CA)
		CZR2704	Owner's Manual (GM-123/CA)
		CZR2705	Owner's Manual (GM-123/ES)
		CZR2702	Owner's Manual (GM-121/EW)
	3.	CZH2717	Styrofoam (GM-203/US, GM-201/EW)
		CZH2716	Styrofoam (GM-121/US, CA, ES, GM-121/EW)
	4.	CZH2718	Cover
	5.	CZE2701	Accessory Kit
	5-1.	PNZ50P160FMC	Screw
	5-2.	WB45FMC	Washer
	5-3.		Pin
	6.	CZD2707	DIN Cord (GM-121/EW)
	7.	CZD2710	Cord Assy (GM-203/US)
		CZD2711	Cord Assy (GM-201/EW)
		CZD2703	Cord (GM-123/US, CA, ES)
		CZD2702	Cord (GM-121/EW)
	7-1.	CZD2706	Cord (GM-203/US)
		CZD2705	Cord (GM-201/EW)
	7-2.	CZD2708	DIN Cord (GM-201/EW)
	7-3.	CZD2712	Cord (GM-203/US, GM-201/EW)
	7-4.	CDF-987	Cord (GM-203/US)
	7-5.	CDF-988	Cord (GM-203/US)
	7-6.	CDK-007	Cord (GM-203/US)
	8.	CZH2706	Contain Box (GM-203/US)
		CZH2703	Contain Box (GM-123/US)
	9.	CHW1020	Reinforcement Paper (GM-203, GM-201)
		CHW1019	Reinforcement Paper (GM-123, GM-121)